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ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

FOR THE YEAR 1892.

Semi-Annual Meeting at Baraboo June 29—30, Annual Meeting at Madison February 7, 8, 9, 1893.

STATE OF WISCONSIN.

VOLUME XXIII.

B. S. HOXIE, Secretary.

MADISON, WISCONSIN:
DEMOCRAT PRINTING COMPANY, STATE PRINTER,
1893.

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LETTER OF TRANSMITTAL.

To Geo. W. Peck,

Governor of the State of Wisconsin.

Sir.—I have the honor of presenting to you, in requirement of law, the twenty-third annual report of the transactions of the Wisconsin, State Horticultural Society, embracing papers read and discussions theron, together with full account of money received and disbursed for the year 1892.

Respectfully Yours,
B. S. Hoxie,
Secretary.

Evansville, Wis., March 3d, 1893.

WISCONSIN STATE HORTICULTURAL SOCIETY.

OFFICERS FOR 1893.

M. A. THAYER, President,	Sparta.
CHAS. HIRSCHINGER, Vice President,	Baraboo.
B. S. HOXIE, Secretary,	Evansville.
VIE H. CAMPBELL, Treasurer,	Evansville.
CARL H. POTTER, Cor. Secretary,	Madison.

EXECUTIVE COMMITTEE.

Ex-officio.

THE ABOVE OFFICERS.

By Election.

E. J. SCOFIELD, Hanover.
WARREN GRAY, Darlington.
DANIEL HUNTLEY, Appleton.
DANIEL WILLIAMS, Summit.
FRANKLIN JOHNSON, Baraboo.
PROF. E. S. GOFF, Madison.
W. D. BOYNTON, Shiocton.
J. F. CASE, Eau Claire.
L. G. KELLOGG, Ripon.
WILL HANCHETT, Sparta.
W. T. BRADDOCK, Mather.

COMMITTEES FOR 1893.

By Appointment.

ON LOCAL STATIONS.

PROF. E. S. GOFF, PROF. W. A. HENRY,	University, Madison. Madison.
R. J. COE,	Ft. Atkinson.
WM. TOOLE,	Baraboo.
GEO. J. KELLOGG,	Janesville.
B. S. HOXIE,	Evansville.

NEW FRUITS.

Prof. E. S. Goff,	Madison.
A. L. Hatch,	Itahca.
Wm. A. Springer,	Freemont.

NOMENCLATURE.

J. C. Plumb,	Milton.
Chas. Hirschinger,	Baraboo.
J. S. Harris,	La Crescent, Minn.

LEGISLATION.

B. S. Hoxie,	Evansville.
E. S. Goff,	Madison.
M. A. Thayer,	Sparta.

FINANCE.

F. C. Edwards,	Ft. Atkinson.
R. J. Coe,	Ft. Atkinson.
Wm. Toole,	Baraboo.

ARBOR DAY.

Prof. E S. Goff,	Madison.
B. S. Hoxie,	Evansville.
Vie H. Campbell,	Evansville.

ORNAMENTAL SHRUBS.

W. D. Boyton,	Shiocton.
A. L. Hatch,	Ithaca.
James Currie,	Milwaukee.

ROSES.

John L. Fish,	Omoro.
J. E. Wright,	Baraboo.
James Currie,	Milwaukee.

REVISION OF FRUIT LIST.

A. L. Hatch,	Ithaca.
Chas. Hirschinger,	Baraboo.
Franklin Johnson,	Baraboo.

RESOLUTIONS.

Vie H. Campbell,	Evansville.
W. D. Boynton,	Shiocton.
A. L. Hatch,	Ithaca.

COMMITTEE ON OBSERVATION.

A. O. Bennett,	Grand Rapids.
J. L. Fisk,	Omro.
J. F. Case,	Eau Claire.
Fred Hardin,	Weyauwega.
Will Hanchet,	Sparta.
R. J. Coe,	Ft. Atkinson.
O. C. Cook,	Oconto.
C. H. Potter,	Madison.
John Menn,	Norwalk.
W. D. Barnes,	Shiocton.
Robert N. Fargo,	Lake Mills.
Daaniel Williams,	Summit.
Wm. Toole,	Baraboo.
F. J. Wells,	Milton.
A. L Hatch,	Ithaca.
Mrs. D. Huntley	Appleton.
A. J. Phillips,	West Salem.
W. A. Ramsey,	Kilbourn City.
Warren Gray,	Darlington.
John Rhodes,	Kansasville.

To the Members of the Committee:

You have been appointed a committee on *observation.* We wish information on several points, and I will suggest some of them so that you may take note as the season advances.

Conditions of temperature, storms, etc. Drouth and its effects. Time of fruit bloom and ripening. Date of early and late frosts. Varieties of fruits grown. Acreage in fruit, quality, where marketed and prices. The nature and quality of soil, exposure and results. Location of orchard and small fruit plantations. Give the varieties of fruit grown in your vicinity either for home use or for market, noting which varieties are most satisfactory. If insect pests are more numerous, what remedies are applied to exterminate them? Are there any new methods of culture or new sorts of fruit? Have you a Horticultural and Improvement Association?

These suggestions and querries will, I trust, prompt you to make observations and send me your report by December 1st, 1893, that they may be transferred in our annual report for the benefit of Wisconsin horticulture.

Respectfully,

B. S. HOXIE,

Secretary.

MEMBERS OF THE SOCIETY.

LIFE MEMBERSHIPS.

Geo. J. Kellogg,	Janesville.
F. W. Loudon,	Janesville.
H. S, Woodruff,	Janesville.
Mrs. Ida Tilson,	West Salem.

HONORARY LIFE MEMBERS.

J. M. Smith, ex-President,	Green Bay.
Dr. Joseph Hobbins, F. C. S., Corresponding Member Royal Hort. Soc., ex-Pres.,	Madison.
O. S. Wiley, ex-Secretary.	Madison.
F. W. Case, ex-Secretary,	Chicago, Ill.
Prof. Wm. Trelease,	St. Louis, Mo.
J. S. Stickney,	Wauwatosa, Wis.
A. G. Tuttle, ex-Pres.,	Baraboo.
B. F. Adams,	Madison.
F. K. Phoenix,	Delavan.
Peter M. Gideon,	Excelsior, Minn.
E. Wilcox,	La Crosse, Wis.
Geo. P. Peffer,	Pewaukee.
Wm. Springer,	Fremont.
J. C. Plumb,	Milton.
J. S Harris,	La Crescent, Minn.

ANNUAL HONORARY MEMBERS.

W. B. Lloyd,	Chicago, Ill.
Jonathan Periam,	Chicago, Ill.
James S. Judd,	Chicago, Ill.
Prof. W. A. Henry,	Madison Wis
Prof. A. J. Cook,	Lansing, Mich.
Edgar Sanders,	Chicago, Ill.
T. T. Lyon,	South Haven, Mich.
Geo. E. Morrow,	Champaign, Ill.

Chester W. Smith.	Kilbourn City.
F. A. Hutchins,	Madison, Wis.
Miss Minnie Myers	Baraboo.
Mrs. Hugh Kelley,	Baraboo.
M. J. Wragg,	Waukee, Iowa.
O. F. Brand,	Faraboult, Minn.
W. A. Burnap,	Mason City, Iowa.
Mr. Shepard,	Orange Judd Farmer, Chicago, Ill.
John Corse,	Wisconsin Agriculturist, Racine.
W. P. Thurston,	Farmers Review, Chicago. Ill.
Mrs. John Winans,	Janesville.
R. B. Kirkland,	Jefferson.
Miss Mary Conway,	Kilbourn City.
E. S. Smith,	Box 192, Belleville Mich.

OFFICERS OF THE WISCONSIN STATE CRANBERRY GROWERS' ASSOCIATION FOR 1893.

W. S. Braddock, President,	Mather.
S. A. Spafford, Vice-President,	Grand Rapids.
J. H. Treat, Secretary and Treasurer,	Meadow Valley.

EXECUTIVE COMMITTEE.

H. O. Kruschke,	Auroraville.
C. J. Kruger,	Dexterville.

OFFICERS OF THE WISCONSIN BEE KEEPERS' ASSOCIATION FOR 1893.

C. A. Hatch, President,	Ithaca.
Frank Wilcox, First Vice-President,	Mauston.
Jacob Huffman, Second Vice-President,	Monroe.
L. Lathrop, Recording Secretary,	Browntown.
Dr. J. W. Vance, Corresponding Secretary and Treasurer,	Madison.
Executive Committee,	President, Secretary and Treasurer.

OFFICERS OF THE WISCONSIN FORESTRY ASSOCIATION FOR THE YEAR 1893.

Date of Organization, April 6, 1893.

Paul Bechtner, President,	Milwaukee.
B. S. Hoxie, Vice-President,	Evansville.
L. S. Cheney, Secretary,	Madison.
C. R. Barnes, Treasurer,	Madison.

ADDITIONAL MEMBERS OF EXECUTIVE COMMITTEE.

H. C. Putnam,	Eau Claire.
Albert Saulsbury,	Whitewater.
Moses Hooper,	Oshkosh.

LIST OF ANNUAL MEMBERS, 1893.

Annual membership fee in this society is $1.00 per annum, and expires February 1, with current year. This list contains all names of members received up to time of printing this volume.

Anderson, Matt	Pine Bluff.
Anderson, Mrs. Matt.	Pine Bluff.
Abott, Wm. A.	Warrens.

Barnes, W. D.	Shiocton.
Barnes, Mrs. W. D.	Shiocton.
Bennett, A. C.	Grand Rapids.
Bendixen, W. J.	Waupaca.
Bendixen, Mrs. W. J.	Waupaca.
Boynton, W. D.	Shiocton.
Boynton, Mrs. W. D.	Shiocton.
Barnes, A. D.	Waupaca.
Barnes, Mrs. A. D.	Waupaca.
Boosier. N. La.	Dorchester.
Brand, O. F.	Faribault, Minn.
Braddock, W. S.	Mather.
Braddock, Mrs. W. S.	Mather.
Burnap, W. A.	Mason City.
Buckingham, E.	Northwestern National Bank, Chicago.

Candee, W. L.	544 Cass Street, Milwaukee.
Crawford, M.	Cuyahuga Fall, Ohio.
Crouch, Mrs. Levi	Baraboo.
Case, J. F.	Eau Claire.
Cook, O. C.	Oconto.
Cook, Mrs. O. C.	Oconto.
Coleman, Prof. J. E.	Evansville.
Coleman, Mrs. J. E.	Evansville.
Campbell, Henry	Evansville.
Campbell, Mrs. Vie H.	Evansville.
Chappell, F. H.	Oregon.
Chappell, Mrs. F. H.	Oregon.

Currie, James	Milwaukee.
Currie, Mrs. James	Milwaukee.
Converse, D. C.	Ft. Atkinson.
Converse, Mrs. D. C.	Ft. Atkinson.
Carpenter, Leon A.	Ft. Atkinson.
Clark, Albert J.	Mayville.
Chandler, W. J.	Black River Falls.
Edwards, F. C.	Ft. Atkinson.
Edwards, Mrs. F. C.	Ft. Atkinson.
Edwards, A. J.	Ft. Atkinson.
Fisk, J. L.	Omro.
Fisk, Mrs. J. L.	Omro.
Fox, Wm.	Baraboo.
Fox, Mrs. Wm.	Baraboo.
Fargo, Robert, N.	Lake Mills.
Fargo, Mrs. R. N.	Lake Mills.
Goff. Prof. E. S.	Madison.
Goff, Mrs. E. S.	Madison.
Gray, Warren	Darlington.
Gray, Mrs. W.	Darlington.
Grubb, Mrs. S.	Baraboo.
Hirschinger, Chas.	Baraboo.
Hirschinger, Mrs. Chas.	Baraboo.
Herbst, J. L.	Sparta.
Howe, John.	Waunakee.
Hatch, A. L.	Ithaca.
Hatch, Mrs. A. L.	Ithaca.
Hatch, C. A.	Ithaca.
Hatch, Mrs. C. A.	Ithaca.
Harris, H. H.	Warrens.
Houston, J. N.	Cambria.
Jeffrey, Geo.	2726 Lisbon Ave, Milwaukee.
Jewet. Z. K.	Sparta.
Jewett, Mrs. Z. K.	Sparta.
Johnson, Franklin	Baraboo.
Johnson, Mrs. F.	Baraboo.
Kellogg, L. G.	Ripon.
Kellogg, Mrs. L. G.	Ripon.

Menn, John	Norwalk.
Mills, Simeon	Madison.
Mead, V. C.	Baraboo.

Odell, R. N.	869 Racine St., Milwaukee.
Odell, Mrs. R. N.	869 Racine St., Milwaukee.

Potter, Carl H.	Madison.
Potter, Mrs. C. H.	Madison.
Phillips, A. J.	West Salem.
Phillips, Mrs. A. J.	West Salem.

Quigg, C. E.	Toma.
Quigg, Mrs. C. E.	Toma.

Richmond, Thomas	La Crosse.
Ramsey, W. A.	Kilbourn City.
Ramsey, Mrs. W. A.	Kilbourn City.
Robinson, N. H.	Centralia.
Rich, J.	Waupaca.

Scofield, E. J.	Hanover.
Scofield, Mrs E. J.	Hanover.
Springer, William A.	Fremont.
Springer, Mrs. William A.	Fremont.
Spring, O. J.	Reedsburg.
Spring, Mrs O. J.	Reedsburg.
Seymour, Asa N.	Mazomanie.
Sherwood, Dr. H. H.	Tomah.
Spring, M. E.	Baraboo.
Spring, Mrs. M. E.	Baraboo.
Smith, Mark, Jr.	Madison.
Smith, Mrs. J. M.	Mineral Point.
Snyder, E.	Baraboo.

Tarles, Rev. J. D.	Sparta.
Thayer, M. A.	Sparta.
Thayer, Mrs. M. A.	Sparta.
Ten Eyck, A. M.	Brodhead.
Toole, William	Baraboo.
Toole, Mrs. William	Baraboo.
Tarrant, Henry	Janesville.
Tarrant, Mrs.	Janesville.
Tobey, C. E.	Sparta.

Tobey, Mrs, C. E.	Sparta.
Treat, J. H.	Meadow Valley.
Treat, Mrs. J. H.	Meadow Valley.
Tobey, J. C., Sr.	Sparta.
Williams, Daniel	Summit.
Williams, Mrs. D.	Summit.
Wells, Frank J.	Milton.
Walcot, E. E.	Sparta.
Walstrom, J. F.	Otsego, Mich.
White, Frank H.	Stoddard.
Yahr, Solon	West Bend.

LIST OF NURSERYMEN AND FRUIT GROWERS IN WISCONSIN.

Boyton, W. D., Shiocton, nursery grown evergreens and seedlings by the million.
Bendixon, W. J., Waupaca.
Barnes, A. D., Wapaca, Arctic Nursery and Fruit Farm.
Barnes, W. D., Shiocton, nursery and small fruits.

Chappel, F. H., Oregon, grower and dealer in nursery stock.
Coe & Converse, Ft. Atkinson, nursery and small fruit.
Currie Bros., Milwaukee, florists and seedsmen.

Dipple, Conrad, Watertown, Wis., fruit grower.

Freeborn, S. I., Ithaca, Pioneer Nurseries.
Fox. William, Baraboo, Prop. Mt. Airy Vineyard.

Gale, Isaac & Son, Waukesha, nurserymen and fruit growers.
Gray, Warren, Darlington, Cottage Hill Fruit Farm, small fruit nursery.

Hanchett & Son, Sparta, Badger State Fruit Farm and headquarters for Van Deman Strawberry.
Howie, John, Waunakee, farmer and fruit grower.
Hatch, C. A., Ithaca, bee keeper and fruit grower.
Hatch, A. L., Ithaca, Hill Crest Fruit Farm.
Hirschinger, Chas., Baraboo, orchardist and nursery stock of all kinds.
Hamilton, C. H., Ripon, fruit farm, small fruits a specialty.

Jewett, Z. K., Sparta, Sparta Nurseries.
Jeffrey, George, 2726 Lisbon Ave., Milwaukee, apples and pears a specialty.

Kellogg, Geo. J. & Sons, Janesville, Belle Cottage Fruit Farm.
Kellogg, L. G., Ripon, small fruit a specialty.

Leitch, John, Mazomanie, small fruit grower
Loudon, F. W., Janesville, small fruits. Originator Jessie strawberry.

Mason, R. D. & Son, Ripon, fruit growers.

Plumb & Son, J. C., Milton, nursery and dealer in all kinds of nursery stock.
Peffer, Geo. P., Pewaukee, nursery and small fruits.

Robbins, Geo. H., Platteville, grower and propagator of small fruit.

Seymour, Asa N., Mazomanie, small fruits. Dealer in plants and vegetables.
Springer, Wm., the Fremont nurseries.
Spaulding, D. J., Black River Falls, grower in small fruits.

Tuttle, A. C., Baraboo, nursery and small fruit.
Thayer, M. A., Sparta, fruit farm; small fruits in variety.

Walstrum, J. F., Otsego, Mich., River Side Fruit Farm.
Wells, F. I., Milton, grower of choice strawberries and pop corn.

Yahr, Solon, West Bend, small fruit grower.

FRUIT LIST.

APPLES.[*]

Five hardiest varieties for Wisconsin—Oldenburg, McMahan,[†] Hibernal, Wealthy, Tetofski.

Ten best adapted varieties (Hardiness, productiveness and quality taken into consideration)—Oldenburg, Wealthy, Fameuse, Tallman Sweet, Wolf River, McMahan, Yellow Transparent, Hibernal, Longfield, Newell.

Additional list for special locations—Utter, Westfield Seeknofurther, Mellow Twig, Golden Russet, Red Astrachan, St. Lawrence, Fall Orange, Fall Spitzenburg. Walbridge, Pewaukee, Haas, Plumb's Cider, Roman Stem, Repka Malenka, Lubsk Queen (Red Queen), Switzer, Shiawasse Beauty, Scott's Winter, Antinorka.

CRAB APPLES (SIBERIAN).

Two Hardiest—Hyslop, Sweet Russet.

For General Cultivation—Whitney, Gribb, Hyslop, Sweet Russet, Spitzenburg, Briar Sweet.

For Trial—Martha, Novelty.

PEARS.

New Sorts for Trial—Bessimianka. Gakooska, Idaho.

Most likely to succeed.—Flemish Beauty.

For trial near Lake Michigan—Snanas d'e'te', Early Bergamont, Bartlett, Onondaga (Swan's Orange), Seckle, Winter, Nelis, Clapp's Favorite, Buerre'd'Anjon, Doyerrne'd'e'te.

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[*] NOTE.—What kinds to plant depends so largely upon local conditions of soil, elevation, etc., that, at best, this list can only be a general guide.

1st. The best sites for apples and grapes are elevated, limestone, clay soils, that are not too rich and are free from untimely frosts.

2nd. Varieties that succeed best on certain soils and subsoils are the best to plant on similar sites.

3rd. For the poorer sites plant only the hardiest.

4th. To prevent contagion of fungus diseases plant but few kinds.

5th. Give protection to tree trunks, proper cultivation; and to secure best results spray to prevent injury from insects and fungus diseases.

[†] Pronounced Mack-man.

PLUMS.

For general cultivation—DeSoto.

Near Lake Michigan—Lombard, Imperial Gage, Yellow Egg [Magnum Bonum], Duane's Purple, Green Gauge.

For Trial.—Rollingstone, Wolf, Ocheda, Rockford, Cheney.

CHERRIES.

For general cultivation.—English Morrelo, Early and Late Richmond [Kentish]

For trial.—Wragg, Bessarabian.

STRAWBERRIES.

For general cultivation and shipping—*Warfield, *Crescent.

For near markets and home gardens.—*Bubach, *Warfield, *Crescent, Jessie, Wilson, *Haverland, Sandoval.

Best varieties to furnish pollen for imperfect flowering kinds—Wilson, Capt. Jack, Michel, Jessie, Sandoval.

Best imperfect flowering kinds.—Bubach, Crescent, Warfield, Haverland.

For trial.—Earle, Wood [Beder Wood], Hoard, Van Deman, Park Beauty, Enhance, *Princess.

Best late variety.—Eureka.

GRAPES.

For general cultivation—Moore's Early Worden, Concord, Delaware, Brighton.

Frosty and unfavorable localities—Janesville, Moore's Early, Worden, Victor, Ulster, Champion, Green Mountain.

For amateurs—Niagara, Lady, Wyoming, Lindley, Vergennes, Massasoit, Wilder, Green Mountain.

BLACK RASPBERRIES.

For general cultivation—Gregg, Ohio, Souhegan, Nemaha; recommend with winter protection. Ohio may do without protection.

For trial—Johnson's Sweet, Palmer, Hilborn, Older.

RED RASPBERRIES.

For general cultivation—Cuthbert, Brandywine, Shaffer, with winter protection.

For early—Marlboro.

For trial—Superlative.

***Has imperfect flowers, and must be planted near those having perfect flowers.**

BLACKBERRIES.

For general cultivation—Snyder, Stone's Hardy, Ancient Briton. [Winter protection is recommended for all.]

For trial—Taylor, Minnewoski.

DEWBERRIES.

For trial—Lucretia, Bartel.

CURRANTS.

Red Dutch, White Dutch, White Grape, Victoria, Albert, Holland, Lee's (black.)

For trial—Fay.

GOOSEBERRIES.

For general cultivation—Houghton, Downing.

For trial—Smith's, Industry, Champion, Red Jacket.

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

Norway Spruce—Scotch Pine, Austrian Pine, White Pine, Balsam Fir, Blue Spruce, White Spruce, Juniper Virginiana, or Red Cedar, Juniper Excelsa, Juniper Savin Sabina, Arbor Vitæ White Cedar, Arbor Vitæ Pyramidalis, Arbor Vitæ Siberian, Arbor Vitæ Hovey's Golden.

DECIDUOUS TREES.

For Timber—White Ash, Black Walnut, Clack Cherry, Butternut, European Larch, Soft Maple, Hard Maple.

Street shade trees—White Elm, Hard Maple, Ash-leaved Maple or Box Elder, Linden or Basswood, European Larch

Lawn planting—Weeping cut leaved Birch, European White Birch, American White Birch, European Mountain Ash, Oak-leaved Mountain Ash, Horse Chestnut, Kentucky Coffee Tree, Norway Maple, Weiss Crab-leaved Maple, Laurel-leaved Willow, Elm, Fedora, Weeping Willow.

ORNAMENTAL SHRUBS.

Hardy—Hydrangea Paniculata, Grandiflora, Snowball, High Bush Cranberry, Syringa Philadelphus, Syringa Aurea, Upright Honeysuckle, Red and White, European Strawberry Tree, American Strawberry Tree or Wahoo, Purple Fringe or Smoke Tree, Purple-leaved Barburg, Lilac, Purple, White and Persian, Black Alder, Spirea, Van Houtti's Crenati, Bellard's.

Half-hardy—Weigelia, Rosea, Gracilis, Varigata, Flowering Almond, Red, Pink, White; Spirea Prunifolia, Flowering Quince, Princess Pisardi.

FOR CEMETERY PLANTING.

Cut-leaved Weeping Birch, Laurel-leaved Willow, Arbor Vitæ American (kept sheared); Arbor Vitæ, Pyramidalis; Arbor Vitæ, Siberian; Arbor Vitæ, Hovey's Golden; Juniper, American Red Cedar (kept sheared), Juniper Snecica Nana.

EVERGREENS FOR GROUPING.

Austrian, Scotch and Cluster Pines, Norway Spruce.

SHRUBS FOR GROUPING.

Hydrangia Grandiflora Pan or Single Spina Van Houttie, Syringa, American Strawberry Tree, Purple-leaved Barberry, Upright Honeysuckle. White, Aurea, Coriner Elegantinna, Climbers, Dutchman's Pipe, American Ivy, Honeysuckle, Woodbine, Scarlet, Fragrant, Japan, Halls, Clematis Coccinea, Virginica Flamula, Jackmanii, Madam Van Houtte, Bittersweet.

LIST OF HARDY ROSES FOR GENERAL PLANTING.

BY J. L. FISK, *Chairman of Committee.*

Climbers—Tennessee Belle, Russel's Cottage, Prairie Queen, Baltimore Belle.

Hybrid China—Madam Planter, Madam Hardy.

Brier—Persian [yellow.]

Moss—Luzemburg, Henry Martin, Salet. [best perpetual moss rose. Paul Fontine, Countess de Murinais, Whise Perpetual.

Hybrid Perpetual—Magna Charta, Marshall P. Wilder, Paul Neyron Prince Camille de Rohan; Vick's Caprice, Mrs. J. H. Lainge [one of the best], General Jacqueminot [best] Earl of Dufferin, Coquette des Blanches, American Beauty, Francois Levet, Victor Verdier.

CONSTITUTION AND BY-LAWS.

As amended February, 1885.

CONSTITUTION.

ARTICLE I. This society shall be known as the Wisconsin State Horticultural Society.

ARTICLE II. Its object shall be the advancement of the art and science of horticulture throughout the state.

ARTICLE III. Its members shall consist of *annual* members, paying an annual fee of one dollar, which shall entitle the wife of such member to the privileges of full membership; of secretaries of local horticultural societies reporting to the state society, who shall be considered members *ex-officio;* of *life* members, paying a fee of ten dollars at one time; of *honorary life* members, who shall be distinguished for merit in horticultural and kindred sciences, or who shall confer any particular benefit upon the society; and *honorary annual* members, who may, by vote, be invited to participate in the proceedings of the society.

ARTICLE IV. Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent, and an Executive Board, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies reporting to this society shall be deemed honorary members and *ex officio* vice presidents of this society. All officers shall be elected by ballot, and shall hold their office for one year thereafter, and until their successors are elected; provided, the additional executive members may be elected by the county or local horticultural societies of their respective districts.

ARTICLE V. The society shall hold its annual meeting for the election of officers, commencing on the first Monday in February. It may also hold a meeting in December of each year, at such place and time as may be decided upon by the society, or the executive committee for the exhibition of fruit and for discussions, and such other meeting for discussions and exhibitions as the executive committee may direct, at such time and place as the executive board shall designate.

ARTICLE VI. This constitution, with the accompanying by-laws, may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The president shall preside at meetings, and with the advice of the recording secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state and report the same to the society. It shall be the duty of the secretary to make an annual report to the governor of the state, of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the president, countersigned by the secretary, and shall make an annual report of the receipts and disbursements, and furnish the secretary with a copy of the same on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds for the faithful performance of his duties, subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committee.

VI. It shall be the duty of the finance committee to settle with the treasurer and to examine and report upon all the bills or claims against the society which may have been presented and referred to them.

VII. The standing committees of this society shall be as follows: 1st. Committee on Finance, consisting of three members; 2d, committee on Nomenclature and New Fruits, consisting of three members; 3d, committee on Observation, as now provided. Said committee to be appointed annually by the executive committee of the society.

ACT OF RE-ORGANIZATION.

AND LAWS RELATINNG TO THE

STATE HORTICULTURAL SOCIETY.

CHAPTER 151, LAWS OF 1879, AS AMENDED BY CHAPTER 14, LAWS OF 1887.

SECTION 1. The executive committee of the Wisconsin State Horticultural Society, shall hereafter consist of the president, secretary and treasurer of said society, and of one member from each congressional district of the state, said members from the congressional districts to be chosen annually by the county and local horticultural societies in the respective districts.

SECTION 2. The present officers and executive committee of said society shall hold their respective offices until the Tuesday next succeeding the first Monday in February, 1880, and until their successors are appointed.

SECTION 3. It shall be the duty of said society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by the holding of meeting for discussion; by the collection and dessemination of valuable information in regard to the cultivation of fruits, flowers and trees adapted to our soil and climate, and in every proper way to advance the fruit and tree growing interests of the state.

SECTION 4. The annual meeting of the society for the election of its officers, the transaction of general business, and the consideration of questions pertaining to horticulture, shall be held at such time and place as may be determined at the last preceding annual meeting. In case of the failure of such meeting to so determine, the executive board may call such meeting by giving at least thirty days' notice to each member of the society.

SECTION 5. All vacancies in the offices of said society may be filled by the executive committee; and should there be a failure to elect a member of the executive committee in any district, the vacancy may be filled by a two thirds vote of the members of the society present at any regular appointed meeting.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactions of the society, including an itemized account of all money expended during the year, in addition to such matters as are now specified in the law relating to the same.

CHAPTER 526, LAWS OF 1889.

SECTION 5. And further, there shall be printed annually upon the approval and order of the commissioners of public printing, ten thousand copies of the transactions of the Wisconsin State Agricultural Society, the same to embrace the reports of the county and other agricultural societies, and such matters pertaining to the agricultural industries of the state as shall be deemed important, provided the whole number of printed pages shall not exceed four hundred. Seven thousand copies of the transactions of the Wisconsin State Horticultural Society, the same to embrace such abstracts of reports of county and other horticultural societies, and such matters pertaining to the horticultural interests of the state as shall be deemed important, provided that the whole number of printed pages shall not exceed two hundred. Eight thousand copies of the transactions of the State Dairymen's Association, the same to embrace such other matters pertaining to the dairy interests of the state as shall be deemed essential provided that the whole number of printed pages shall not exceed two hundred. Twelve thousand copies of the report of the Agricultural Experiment Station of the State University, provided that the whole number of printed pages shall not exceed two hundred and fifty. Two thousand copies of each of said reports to be bound separately in cloth, all others singly in paper.

SECTION 6. The reports provided for in the preceding section shall be distributed as follows, through the superintendent of public property: Fifteen copies to each member of the legislature, fifty copies to the State Horticultural Society, ten copies to each county agricultural society, and district industrial association, which embraces two or more counties and furnishes the State Agricultural Society a report of its proceedings, to each of the four societies named in the preceding section, fifty copies of each of the reports of the other three societies, twenty-five copies of each of the reports to the library of the state university; to the governor, lieutenant-governor, secretary of state, state treasurer, attorney-general, state superintendent of public instruction, railroad commissioner and insurance commissioner, twenty-five copies each; to the state superintendent of agricultural institutes, fifty copies; to the superintendent of public property, commissioner of labor statistics, adjutant-general, quartermaster general, state board of health, each ten copies; to each public library in the state, two copies; to each state normal school, two copies; to each of the state charitable and penal institutions, one copy; and the remaining copies to the respective societies for distribution by their secretaries.

SECTION 7. In no case shall the number of printed pages in any report provided for in the act exceed the maximum number specified, except upon written request of the officer submitting the same, and then only upon previous written approval of a majority of the commissioners of public printing, such application and approval to be filed with the secretary of state.

CHAPTER 417, LAWS OF 1889.

SECTION 1. The governor is hereby authorized to set apart by proclamation one day in each year to be observed as a tree planting or arbor day, requesting all public schools and colleges to observe the same by suitable exercises, having for their object the imparting of knowledge of horticulture, in the department known as arboriculture, and the adornment of school and public grounds.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

Approved April 16, 1889.

JOINT RESOLUTION NO. 19, A.

WHEREAS, The Wisconsin State Horticultural Society has many valuable books which it is desirable shall be preserved; and

WHEREAS, Many such have heretofore been lost in moving from room to room; therefore,

Resolved by the assembly, the senate concurring, That room number twenty-seven (27) in the capitol is hereby set apart for the permanent use of said horticultural society; provided, that nothing herein contained shall be construed to prevent its use by the clerical force of either branch of the legislature during any session thereof.

CHAPTER 117, LAWS OF 1893.

AN ACT to appropriate a sum of money to the Wisconsin State Horticultural Society.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. There is hereby appropriated the sum of fifteen hundred dollars out of the general fund, annually, to the Wisconsin State Horticultural Society, in lieu of all other appropriations to said society.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

Approved April 8, 1893.

REPORT

OF THE

TRANSACTIONS AT THE SUMMER MEETING

OF THE

WISCONSIN STATE HORTICULTURAL SOCIETY,

At the Court House, Baraboo, June 29, 30, 1892.

Meeting called to order at 11 A. M., by President M. A. Thayer and the following committees were appointed:

On Plants and Flowers—Miss Tillie Reuhl, Mr. Griggs, Miss McKennon, Baraboo.

On Strawberries—A. L. Hatch, Ithaca; J. S. Harris, La Crescent, Minnesota; Mrs. Hugh Kelley, Baraboo.

On Vegetables—Alex. Toole, Miss Gathker, Baraboo.

On Special Premiums—Chas. Hirschinger, Baraboo; A. J. Phillips, West Salem; J. S. Harris, La Crescent, Minnesota.

On Resolutions—Franklin Johnson, Baraboo; Prof. E. S. Goff, Madison; Mrs. H. Potter, Baraboo.

On Revision of List of Ornamental Shrubs—Wm. Toole, Baraboo; Geo. J. Kellogg, Janesville; Prof. E. S. Goff, Madison

Adjourned to afternoon meeting.

COURT HOUSE, 2 P. M.

President M. A. Thayer: There are three things we have met here to do; first, for the advancement and general welfare of the society; second, for the mutual good received and the benefits to be derived from the interchange of thought and comparison of experience in regard to growing fruits and plants; third, the enjoyment of the society of each other.

We hope that the papers which will be presented here will be freely discussed and criticized; we want criticism and hope all will feel not only at liberty, but will feel it to be a duty to freely discuss any question that may come up for our consideration, and these discussions will only be limited by time. We will now listen to the

ADDRESS OF WELCOME.

By E. C. WISWALL, Superintendent of Schools, Baraboo.

Mr. President, Ladies and Gentlemen of the Wisconsin State Horticultural Society:—For the third time in the history of your society you honor our city with your presence, and it is with great pleasure and satisfaction that the citizens of Baraboo and the Horticultural Society of Sauk county, extend to you on this occasion a most cordial greeting.

You represent an organization that, for more than one-third of a century, has carried forward a most grand and fruitful work. By the dissemination of knowledge concerning the art of horticulture; by the direction, the encouragement and the inspiration you have given the amateur in these pursuits, you have not only augmented the wealth of this commonwealth, but you have materially promoted the happiness and well-being of its citizens. Viewed simply from an economic or utilitarian standpoint, your service is deserving of the highest commendation. But, sir, there is a still grander and nobler phase of your usefulness. We recognize the fact that there is a "knowledge never gained of schools;" there is a culture, a training not gained in the class room; there are teachers that never enter the school-house. Prominent among these silent but potent influences that are instrumental in the moulding of character are our daily environments. Every flower that unfolds its petals to mortal view is an educator, teaching a lesson of purity and usefulness and immortality.

And so, Mr. President, mindful of what your society has done in the past and is still doing to create a love for the beautiful in nature, we recognize in your organization an educational agency of the higest type. We live in a world of beauty. Whether we view the bloom and fruitage of this beautiful month of roses as spread before us here to day; contemplate the gorgeous autumnal landscape; examine the tiny snow-crystal of winter; peer into old ocean's darkest recesses, or scan the starry firmament above,—wherever we turn we find harmony and symmetry and transcendent beauty. But alas! how many are blind to all this beauty? It is your mission to open the eyes of these that may perceive, enjoy and be benefitted by this marvelous beauty that embellishes every page of the great book of Nature.

We recall the fact that the Wisconsin State Horticultural Society called into existence, or at least hastened the advent of Arbor Day in Wisconsin. It was my privilege, Mr. President, to help to carry on the work in Sauk county that you inaugurated, and on the 30th of April, 1890, I witnessed the planting by the hands of children, the first tree on many a treeless and barren school site in this county. From this beginning, humble though full of promise, the good work will go on. The newly planted tree in the corner of the humble school site at the cross-roads is a more eloquent and positive tribute to your usefulness than can be expressed in words.

We feel that the natural resources of this locality are especially inviting to the horticulturalist and the lover of nature. Our fertile and varied soil, our rich native flora and the romantic scenery at our doors all combine to make this a most fitting place for a gathering of this kind. And I will say further, at the risk of being charged with boasting, that the citizens of Baraboo take pride in the fact that during your long and useful career you have numbered among your active, efficient and zealous members several of our respected townsmen.

Again in behalf of the Horicultural Society of Sauk county, in behalf of the citizens of Baraboo, and in behalf of the great cause of education which you have served so well, I extend to you a most hearty welcome.

RESPONSE.

By A. L. HATCH, Ithaca.

Mr. President, Ladies and Gentlemen: In responding to this cordial welcome I would like to express something of the feeling we have towards the citizens of Baraboo but I feel somewhat inadequate to the task. I sometimes think if it had not been for the grand people of Baraboo we should never have had a State Horticultural Society.

We realize there is something deeper and broader than the mere *words* of the welcome. An old pioneer resident who is much noted for his efforts in horticulture has made it possible for a welcome to be extended to this Society to-day.

There is an element in the Wisconsin State Horticultural Society to which I bid your attention; I do not know but that it is the same spirit we had at first, but it is broadening out into a different and a larger spirit; it is appealing to the boys and girls. There is a man at Madison who is working hard in this line; who is instilling the principles of horticulture in the minds of the young people of Wisconsin. I believe that horticulture is the foundation which makes the welcome we have listened to so broad and generous, and I can say that we respond in the same spirit.

THE FRUITS WE HAVE ON OUR TABLES.—STRAWBERRIES.

By JOHN L. HERBST, Sparta.

Taking it for granted that all present are tillers of the soil and dependent upon the products of your gardens and farm for your support, the question arises, how shall we make our farms yield the greatest profits? That which gives the greatest profit gives also the greatest pleasure; so that if you would derive pleasure you must procure the greatest profits possible from any one crop.

This subject, "The fruits we have on our tables," I take as meaning the fruits we have here on our tables for exhibition, therefore that which I shall treat of will be the strawberry.

Strawberries are the most beautiful and delicious of all our early fruits, they are so easily cultivated that any one possessing a few rods of ground can easily supply his table with an abundance of this fruit

Mr. P. Barry said: "To grow large, handsome, fine flavored fruit in abundance, it is not necessary to employ a chemist, to furnish us with a long list of specifics, nor even to employ a gardener by profession who can boast of long years of experience. Any one who can manage a crop of corn or potatoes can, if he will, grow strawberries." This is true; any one who can manage a crop of corn or potatoes successfully can grow strawberries.

In reading and listening to the different experiences of fruit growers I find that the grand point of success is to grow the finest berry, let the variety be what it may, either for home or for market. For a distant market, firmness is not only desirable but an absolute necessity.

Procure the variety that is best adapted to your climate, soil and location. Since experimenting produces new things, experiment with the different varieties and procure that variety which will do best with you. One variety may do well in one section of our state and may be entirely worthless in some other portion. The different methods of culture will somewhat change the quality, productiveness and hardiness of a variety. No one system of cultivation will do for all. In each locality, the method of culture best adapted to the present conditions can be determined only by the practical experience of the growers in that locality. A grower should first procure that variety which does best with him and then go ahead with procuring the finest and firmest berries, using the best methods, because only the best methods can win.

Let me take you to a six-acre strawberry field situated on the Thayer fruit farms at Sparta and give you the method that was used in growing the crop of berries that is now being picked.

The field was originally a meadow of clover. In the summer of 1890 a crop of clover was taken from it and a second crop allowed to grow. This second crop was plowed under, but not to a very great depth. It was then Acme harrowed; later in the fall it was plowed again and to a greater depth; through the winter it was top dressed very heavily. In the spring of 1891 it was gone over thoroughly with a disc harrow, working in the top dressing to a convenient depth and after this an Acme harrow was run over it leveling and pulverizing the soil. The ground was then marked off into rows three and one-half feet apart and plants were set two and one half feet in the row. The method employed in setting was the spade method. One man using the spade and a boy following with the plants, spreading the roots and holding the plants until the spade is withdrawn.

Cultivation was given as soon as setting was finished and continued at intervals during the entire season. All blossoms and runners were picked off to the first of August; at the approach of winter a protection of straw was given them.

'his spring, as soon as danger of frosts were over part of the covering was removed, the remainder being left on as a protection to the fruit.

By this method there was secured a good matted row with a sufficient amount of bearing surface for a very good crop, but owing to the changeable and wet weather there will not be so large a crop as was expected. The yield will probably be about 200 bushels to the acre, the main crop being Warfield and Michaels.

Having been in the employ of the Thayer fruit farms for the last four years I find by careful observations, the following points regarding the different varieties of strawberries grown there.

Only the best methods are employed and each variety has received the same care and work.

The following is a report of a few of the many varieties that have fruited this year.

The first to blossom and first to ripen were Michaels; four days later came Thompson No. 5, 6, 9 and 26. Mt. Holy Yoke and D & D; two days later Parry, Gov. Hoard, Shusters, Monaduck, Pearl, Belmont, Sucker State, Great Pacific, Parker, Earle, Viola, Lady Rusk and Thompson No. 25.

Thompson No. 9 (stammate) was the only Thompson that showed great promise. It is prolific in growth of healthy plants and as a pollenize bearing firm, large, well shaped berries, coming four days later than Michaels. Schuster, Gem (pistillate), is prolific in plants and appears valuabl

Gov. Hoard and Thompson No. 9 will rival each other in value as staminates, and Gov. Hoard will be of great value if it continues next season as well as this; it is a very large and beautiful berry.

The Sandoval (known heretofore as Warfield No. 1) is a fit companion for Warfield No. 2 and will be used to a great extent as a fertilizer for it next season, probably dividing honors with Michaels, Parker Earle and Jessie on the Thayer fruit farm.

I think that Michaels is one of the most valuable of our staminates; it is of perfect shape, being a grand blossomer and pollenizer, extremely prolific in plant making, and the flavor of the berry being nearer to that of the wild berry than any of the 57 varieties growing on the farm, and many of our growers who have spoken in disfavor of the Michaels will agree with me this season in saying it is the most valuable to-day of any of our known pollenizers.

Lady Rusk is a valuable shipper but not prolific.

A great many of the varieties have shown signs of rust this season but we must make an allowance for the extreme wet spring and summer, and we must not throw out any of our varieties for that reason, as they may in an average season prove as valuable as our best known varieties.

The Thayer fruit farms are in hopes that the Gillispe, Van Deman, Mrs. Cleveland, Southard, Suidle, Dayton, Boynton, Standard, Auburn, Martha, Middlefied, Cyclone, Saunders, Staymakers, E. P. Roe, Beder Wood, Park Beauty, Beverly, Enhance, and fifty others will eclipse any that they now have, but are doubters until such seasons as this and last year have tested them thoroughly. Give me the Warfield fertilized with Michaels and a few other well known varieties until other good ones are produced.

The matted row system this season has shown to growers this fact, that it is the only successful method of growing strawberries if both pistillate and staminates are to be used.

I would advise the plant bed system for growing plants for sale (not for fruiting) as plants are in a healthier condition in every way when dug from plant beds and there are no chances of mixing varieties.

Secretary—I understand that Mr. Kellogg represents Mr. Loudon's fruits and I hope he will also represent him on this subject. Mr. Loudon was well known to us as one of the largest growers and originators in the northwest and his experience is valuable to us.

Geo. J. Kellogg—I do not represent anybody but myself, but I will say that I brought thirty-six varieties of seedlings here that Mr. Loudon did not consider worth numbering, when he numbered his one hundred and twenty-six varieties, except one and that is the No. 2. The crop all sold at fifteen to eighteen cents per quart because it was so early. Mr. Mead brought a quart of berries to me which I have brought here to show you something new and I move we christen it Mead. [Motion prevailed.] No one has any of the plants excepting Mr. McGowan The plant stands up a foot high; I believe it is worthy of trial or I would not have asked you to name it. I would like to hear from Mr. Crosby regarding his seedlings.

Mr. Crosby—Being an aged man and unable to endure extreme hard labor, I commenced sixteen or eighteen years ago, cultivating small fruits and seedling strawberries. I found that if I obtained a fine variety that exceeded the parent plant in productiveness that it would pay to give it a trial. My No. 10 has never failed me until this year. My exposure is to the north and northeast and the frost destroyed all the blossoms. I have simply planted seeds of the best specimens I have raised to obtain plants; I have put those plants on sterile soil that had not been fertilized to any extent and if they succeeded I transplanted them. I do not raise berries extensively for the market but I grow seedlings. There is one thing that might discourage any propogator of strawberries; he might have a variety that would succeed very well but if he should move it ten rods it might be a perfect failure; again, he might have varieties that would succeed this year and next year be an utter failure. Our climate is very hard on tender plants and a seedling that is tender, that has not vigor, is utterly worthless –it is of no use. I formerly tested most of the leading varieties that were thrown on the market, but for the last ten years I have not experimented with them so largely.

A. L. Hatch—One very important point ought to be considered and that is, a variety may be condemned, and often is, when it ought not to be, because it did not fruit in a certain season, like the present wet season for instance. But if you have a variety that rusts, condemn it. Mr. Tuttle said of his Russians, "If they will stand a severe winter I shall recommend them." Just so with your strawberries; if you have those varieties that will rust this season, hoe them right up. I have in my own experience, cut down trees that have failed me. I think this season is one that will be a test to varieties.

Secretary—Mr. Hatch says, "If a variety rusts throw it away." The Warfield rusted this year and I never knew it to rust before; now I would not feel like throwing it away. This seems to me to be a season in which we can gain experience. I am in hopes that facts may be brought out in this discussion with regard to the fertilization of our plants by insects.

A. L. Hatch—I intended to have said that while we should not take this season as a test, generally speaking, yet ther are some things in which it is a test; with regard to rust, this season is a test and if you have a thing that rusts throw it away lest it infects others.

President—Taking rust as a test, I have one variety that has rusted so that it is destroyed by it and that is the Sandoval.

A. L. Hatch—Every difference is a test. If you have a variety that rusts in one place and not in another, it is incumbent upon you to find out under what conditions those fungi exist. If I see a golden russet at Mr. Hirschinger's and see it in splendid condition, then go to my own orchard and see it looking sickly, I begin to think the trouble lies with me. If they have generally failed I condemn them. I believe I have learned new lessons, unless there may exist some conditions somewhere that show we can do better. Three-fourths of as beautiful black raspberries as I ever saw are dead, the result of those fungi. I did the best I could and I failed.

Prof. E. S. Goff—Three years ago I procured one hundred plants of first strain of Wilson of J. M. Smith. I set out fifty in one end of a bed one hundred feet long and fifty in the other end of the bed; one end of the bed has rusted while the other end has never rusted. The plants taken from the bed show a marked difference, thos from one end being very vigorous while those that rusted were not vigorous. There was a slight difference in exposure. I supposed I had made conditions equal.

Secretary—One thing I wish to combat and that is Mr. Hatch's recommendation to throw every thing away that does not perform well this year. I know of an old orchard fifty rods from my house, one row of which is healthy and vigorous even in this trying year. I do not believe in throwing away everythig that does not do well on my grounds, or that does not do well this year.

Geo. J. Kellogg—I do not think there is more than one-fourth of the strawberries that we recommend that are not rusting this year. That peculiar blight that struck everything in June rusted varieties that never rusted before. There is no variety on these tables but shows rust. Shall we throw them all away? No, sir. In regard to Michaels it is not worth a cent. The president can recommend it but with me it does not give one quart to forty of Warfield.

President—The Michaels I fruited last year for the first time, and am very much pleased with it as a fertilizer which is the main thing; for fruitfulness it is very weak; it is not a good bearer and the berries do not continue large in size to the end of the picking, but I retain it for a fertilizer. With regard to rust, plants on my own farm a year ago were more or less affected with rust but beds set two years ago are free from it. It may be something in the growth last year that has made the difference.

Geo. E. Hanchett—The Sandoval is nearly ruined with rust, the Gandzy is'nt any better. Our soil is a clay loam. Plants set last year for bearing this year are more or less affected with rust while old beds are quite free from it. I think this is a very good year to learn a lesson with regard to this subject. Last year we wanted to learn what varieties to plant that would stand in a dry season; this year we need to learn what will stand in a wet one. The perfect blossoms are not setting berries equally with the pistillates. I have come to the conclusion that the pollen is already for use as soon as the bud opens. We have one row of fertilizers and two rows between them. The Jessie has done very poorly, not a quart of berries on a bed seventeen rods long; last year it was not so.

J. S. Harris—I have been growing strawberries and I have observed one thing—that a three year old strawberry bed is worth more than a two year old bed. I am inclined to think that our two year old beds did not have the roots to take up the first rains. I put out quite a strawberry bed last year and put it out late; the Warfields are almost as good as they are on a two year old bed. I have observed this year a great scarcity of the insects that we attribute to be the ones that carry the pollen. I found on the Parker Earle that a large proportion of flowers are destitute of pollen. I believe it is a mark of wisdom for growers to keep a strawberry bed over the second year. We have some growers in Minnesota who advocate plowing a bed up and setting a new bed each year. If I had followed that practice this year I should have been out of berries.

Geo. J. Kellogg—I said I did not consider Michaels worth a cent because we have others so much better; with me it does not bear one-fortieth as much as the Warfield. When I sell it I want a man to take his choice; it is a strong plant and that is about all you can say of it. The Sandoval that has been spoken of so badly is not rusting any more with me than other varieties.

Secretary—I have an old bed of Jessio; the second year of bearing and it has not as many berries on it as the new bed set one year ago. We must come to the conclusion that nature has some secrets she has has not revealed to us.

J. S. Harris—Downer's Prolific was hardly worth picking last year, the Jessie hardly bearing at all this year, while the Downer is bearing well.

A. L. Hatch—Sandoval is not rusting on Hill Crest farm. The Monadnock is fruiting well and has good foliage.

J. S. Harris—I would like to have Mr. Kellogg recommend some kind for a pollenizer that is strictly reliable for all conditions.

Geo. J. Kellogg—I cannot do it but I would put Parker Earle, Sandoval and Crawford; the foliage of Parker Earle is not affected with rust; I have fruited it for two years. I would put in Bedar Wood as one for very early.

Wm. Toole—What is the quality of the Haverland this year?

Geo. J. Kellogg—We never claimed that the Haverland had quality, but it is loaded down with berries.

President—It is not good for long shipments because it is soft.

Geo. E. Hanchett—There is one thing that is not taken into consideration with regard to rust on plants; our plants were injured by the winter and they did not get sufficiently well rooted last fall.

Geo. J. Kellogg—When are fruit buds formed?

Prof. E. S. Goff—They are formed in late summer or early autumn.

A. L. Hatch—Is it not true that some plants will fertilize another plant better than its own variety?

Prof. E. S. Goff—Yes, sometimes. So far as I know most all of our pistillate plants have a certain per cent. of stamens or aboitireive stamens. I enclosed a bed once with mosquito netting, and although it was more than one hundred feet away from any other bed, it produced a number of berries. Pistillate varieties are well fertilized, while those that are staminate are not perfectly fertilized. It is often claimed that insufficiency of root development renders the plant liable to fungus. Plants grown on rich soils are more liable to certain fungus diseases than others. We have several fungus diseases of the strawberry. We have two varieties that are known as rust.

P. Crosby—I would like to ask Prof. Goff if he thinks it necessary that insects should carry the pollen?

Prof. E S. Goff—I think it necessary that it should get there some way, either by the air or by insects. Insects that induce fertilization must not be confounded with the honey bee.

Geo. J Kellogg—With regard to the Wilson from J. M. Smith's grounds, I have three times raised what he calls his inbred Wilson and have each time failed.

President—There are some things that may seem misleading to the audience, in strawberry culture; you will find that we disagree. I find there is no one berry that will grow perfectly well on all soils and under all conditions. I have the Michaels on my sandy soil and it does very well. Mr. Kellogg has a heavier soil. I think perhaps difference in soil makes the difference in color.

Mrs. Wood—We thank you for the hints you have thrown out with regard to raising strawberries.

Geo. E. Hanchett—I have noticed with regard to the Crescent, a row of small stamens with very little pollen, and I think those plants would produce a few perfect blossoms.

Geo. J. Kellogg—I move that we request each grower, whether he be amateur or professional, to recommend five perfect and five imperfect varieties.

Chas. Hirschinger—I move to amend that motion by making it three best varieties, staminate and pistillate.

Wm. Toole—I think we had better extend it to five varieties. Some of you think a great deal of the Bubach.

Motion carried as amended.

President—There is another question that enters into the matter; take for instance a person raising berries for market as I am, he will raise the berry that will look the best and ship the best; another raises what *he* deems best for the table and between the two there might be a wide difference of opinion and yet each is an authority so far as his own wants are met. I wish those in the audience, interested in growing strawberries would make out a list of what they consider the best varieties and hand it to the Secretary.

WISCONSIN APPLES AND HOW TO MARKET THEM.

BY A. L. HATCH, Ithaca.

This subject would imply that we have some apples grown in Wisconsin that are not grown elsewhere, while the fact is we have no apples grown here that could not be successfully grown elsewhere. There may something in our soil that may give coloring so as to mark the distinction that causes them to be known in the market as Wisconsin apples. It perhaps may be inferred from the question that there have been some varieties that were originated in Wisconsin; that is true and perhaps of those the most worthy are the Newell and the Wolf River apples. I wish to bring out some points that may show us the best way to market our fruits; this might imply picking and selling to home consumers or it it might imply sending to near markets or selling to a shipping agent.

Those who do not have wagons with springs may market by putting straw in the bottom of the wagon box, then raising the box and putting a bundle of hay or straw right under the box, this will do away with a large part of the jar. Sort as they are picked, put them into barrels; face up the barrel with fine apples. shake the apples down well every time you put in a half bushel. If you have good, careful pickers and superintend the work yourself it will be very rare that a wormy or defective apple will go in. Apples properly picked and packed are half sold. It was an actual fact that in the most discouraging time the market ever saw, I shipped some apples down to Janesville that were simply horse apples—a very poor kind of apple. They brought me after re-shipping from Janesville $1.60 per barrel.

It is better for the grower to sell direct to those who use them, that is direct to consumers; in that way you would ship on orders. If we ship into Chicago we are dealing mostly with men who handle the fruit. I shipped apples to St. Paul and to Minneapolis. One firm I shipped to was a German firm, I dropped the Minneapolis man and shipped to the German; the Minneapolis man returned me 75 cents apiece for ten barrels saying "the apples were overheated."

I shipped to Chicago and was astonished to find that Wisconsin apples had a market value that was above Ohio and some other states. I found in shipping over the railroad some tact is required in the management of the apples while in transit. If they are shut right up in the car they will not reach their destination in as good a condition. In shipping to Minneapolis they have to go through four different divisions. I went to the agent and asked him if I shipped forty barrels of apples if he would not ship them right through, and he said he would do so.

I want to bring out such facts as we can use when we are shipping to market. I will leave this subject for Mr. Hirschinger to finish.

Chas. Hirschinger, Baraboo—Mr. Hatch said he was going to leave the subject for me to finish up and I do not know any better way than to criticize a little, and will start in on his way of picking and sorting for packing.

Now suppose some one is up in a tree sorting those apples, he cannot see but one side of an apple. Now all those apples ought to be picked, but they may not all be equally ripe. I pick all on the tree, spread them on an old cloth and sort; if I find an apple that is wormy or not fit to pack, all I have to do is to roll it off. Mr. Hatch said he had a good opinion of a Dutchman, etc., because he got money out of him. After your apples are all ready, you want to know the best time for selling, whether we had better put our apples into the cellar until Michigan has come along and put her apples on the market and then sell, or whether we had better ship and get all we can before. Mr. Hatch said he sent his Duchess to Chicago and got a fair price; now he did not get much of a price and I do not want any Yankee to feel proud of it. You will find in sending to a commission man that it is his interest to sell to the best advantage he can; he will urge every fruit grower to send his fruit to him and if he gets a majority of the fruit he will sell it and get his twenty-five cents a bushel. We can sell our apples just as direct as our Sparta people do their strawberries and let the commission men alone. Let commission men on apples turn to something else.

A. L. Hatch—How can we reach the consumer so we can sell direct when we have forty barrels a day to ship?

Chas. Hirschinger—You will have to get your purchasers; you cannot do it in one day or two; you must go to see them; it will not cost you half as much as it will to pay commission men. Sometimes we are like the young hunter hunting deer; we are lurking too far off. We want more fruit, and the market will come right to our own door. I have known good apples—just as good as were ever raised anywhere—Fameuse, that if they had been properly packed, would have sold as high as Ben Davis or any other variety of apple, that were well nigh ruined.

Be careful about your package; get new barrels; you can get them for twenty-five cents by the hundred, and make it as tasty as you do your crop of strawberries.

Mr. Tuttle puts his apples into the cellar and sorts over again. He gets from eighty cents to one dollar per bushel when he sells, but would only get about forty cents if he sold early.

J. S. Harris—What would comprise Wisconsin apples? Whenever Wisconsin raises an abundance of such apples as we took down south, handle them carefully and pack as we ought to, they will sell better than any other apples south. There will be no trouble about selling them if we get the apples. There were some apples shown at the pomological show from Minnesota and Wisconsin, that people from all over the United States were loading us down with questions of how we were growing them in these wilds, etc

President—I know nothing about marketing apples but I have had considerable experience in marketing small fruits. Few people realize what a market there is in the far west. I am sending berries 400 miles and I get good results. I have had a man this summer, looking up the market in the far west and it has exceeded my expectations. I believe if the people of Baraboo who grow fruit will go there to look it up it will pay them. Look for your market in the north, in northern Wisconsin, in Minnesota and the Dakotas If you do not wish to go there, often a well directed letter will give you good results. You have no idea of the amount of fruit received in Minneapolis! I believe it is the third largest distributing center in the United States. I believe, from my own experience, that we can get along very largely without commission men. We do not sell our best fruit to them; if we have something sandy or soft that we do not wish to put our stencil upon we ship to commission men.

A proposition was made to hold one meeting at Devil's Lake but upon discussion by the members it was voted not to do so.

you want a light one. In spraying for grapes we sprayed for a fungus and our experiment in this direction was one of the first made in America. You can spray your potatoes and do it very quickly.

It takes one gallon of mixture to spray a tree of from twelve to fourteen feet in diameter that will bear ten to twelve bushels of apples; you will need one man to help, and a team. I have sprayed for grape rot and mildew just after the vines were put up. You can buy blue vitriol for five cents per pound by the barrel; in less quantities for eight cents. On about 800 bearing vines I used over two barrels.

I spray strawberries with Bordeaux mixture for rust; it is important in using this mixture that you keep it well stirred.

Prof. Goff has not told you half of what he has done. We are just on the threshold of spraying and I expect the time will come when every farmer will have his spraying apparatus. Insects are becoming more numerous all the time and we shall need to spray more.

Adjourned.

EVENING MEETING.

ARBOR DAY IN SCHOOLS.

PROF. F. A. HUTCHINS, Department of Education, Madison.

[Mr. Hutchins gave a very able address which was not taken down by the reporter.—SECRETARY.]

J. S. Harris—I desire to make a motion. We need something more than base ball and manual training to continue the progress of our civilization, our able and genial president has helped the way along and the motion I wish to make is that we extend Mr. Hutchins a vote of thanks for the very able address he has given this evening.

Motion prevailed.

OUT DOOR EDUCATION BY DOING.

PROF. CHESTER W. SMITH, Kilbourn City.

By unanimous consent of the masses of America, by the logic of events and the test of time, our public school system has been, and is, not only a success but a necessary contingent to the very life of a democratic form of government, necessary to the success of universal suffrage necessary to the happiness of a liberty loving people.

Self styled keepers of the educational fold may cry wolf! wolf! when there is no wolf in that political direction at least.

The school house is embowered too snugly in the hearts of all the people to be stampeded by any class or faction. I do not therefore come before this representative body, insanely waving a danger signal. I come to you as a member of this convention to suggest methods and thoughts as to the cultivation of a kind of plant known as the genus homo. We are all striving for progress.

No system nor institution, can long remain at a standstill.

This convention is an evidence of the desire for knowledge and enlightenment, upon one of the great branches, of human industry.

In educational circles progress is also desired. We are reaching out for better ways of rearing boys and girls from their mothers' arms to the world's rough grasp. How shall we cause two boys to grow up honest and industrious where but one grew before?

One of the problems yet unsolved, is how to stem the increasing tendency of parents to surrender the entire education of their children, to the nine months in the year, four weeks in the month, five days in the week and six hours in the day, of public school.

In that great representative body, the Wisconsin State Teachers' Association, the presidents address last winter placed this as a first consideration, in "educational reforms " "If the progress of the child is not as rapid as heridity might demand who is blamed for depriving him of his inheritance? The teacher. Who is responsible for unamiable traits? the teacher. Who bears the chief burden of responsibility for defects discovered in the system by critical if not unfriendly eyes? The teacher. We have too long played the Jorkins to this Spenlow and it is but proper that we assert ourselves to the extent of placing responsibility where it justly belongs."

When the nature of the child is stained by the vices of the home where should we look with deprecatory eye for the person responsible for the standard of morality by which the action in the school is judged?

It may be said we are lacking in executory power and hence are powerless to eradicate these evils. But we need not condone them as we do by our silence as to the real offenders and our willingness to become their scapegoat. "Carthage must fall" was a burden of a Roman's oratory; and Carthage fell. Have we no resource in persistent and insistent declaration of the facts? No power of resistance but the interposition of the weak personality of the teacher, weak because "sufferance is the badge of all his tribe?" Then the pen is not mightier than the sword and "men have lost their reason."

The above is from Supt. John Nagle's president's address.

A prominent business man of our city said to me last week. "I can tell what kind of a school we are having by the way children behave on the street."

That it is not right, and will not do, for parents to shun the responsibility of their children's training, is as plain a unison as ever entered the brain of reasoning man.

One of the grinding pebbles making this one sided educational system is the wrong idea constantly held by parents, and too many teachers, as to the nature, the definition even, of education.

Education should be recognized as made by the sum total of the influences and impressions which surround the plastic mind of the human being from the time he is born not only but from the time both his parents are born to the death of the individual.

Education may tend downward as well as upward in the scale of human well-being.

To be rightly and easily educated, one must be well balanced by nature, must have good parents and good blood physically.

What we as teachers rightly protest against, rightly for parents and their children and in justice to ourselves, is that people so persist in sending their children to school with the idea that they get all their education there.

Take one feature of education, that of the will, and the training to industry and honesty, probably the most important, for most other faculties largely depend upon these.

In cities and villages, business men are engrossed in their daily cares and problems of trade. Their boys are expected to attend school, but have nothing in particular to do the other two-thirds of their time.

The mothers have seldom the executive ability if they have the opportunity and good sense to find stay-at-home-ative employment for their boys.

Both parents believe in school. The father fondly assures himself that while he had to work hard in his younger days, his boys shall spend that time "getting an education." He seldom reasons that the work he had to do was the best education a boy can possibly have. But they trust implicitly in the school, and they don't believe in finding fault with the teacher either. They are proud of their school and their children attend as regularly as they can coax them to. The public press lauds the public school, all the people say amen and every body is satisfied. But school is out and the education of the boys goes right on, the two-thirds of the time spent out of the school must be counted, in summing up the educative influences surrounding the boys.

In fact for the kind of boys we are seeking to save, time out of school has the advantage all around, for these boys love the great free out doors, and their hearts are willing converts to these out door exhortations. Right here let me say that there is less danger for girls, for home duties require more of the girls' time than of the boys', and the tendency of girls to shun school duties is not so marked as that of boys. This is one cause of the preponderance of girl graduates.

The boy who spends his time out of school hours constantly searching for amusement. who is always defending and never assaulting, who has just enough work to learn to hate it and to shun it, will become expert in means to shirk every duty, will learn the ways of the idler, will lose the ability to conquer a difficult task, and forget the bliss of success.

He will enjoy the company of loafers, and do every task assigned under protest. He will be educated in how not to do a thing, and by long practice will become as proficient as the beggarly tr mp of the streets.

A minister said to me last month, "No wonder minister's sons sometimes turn out badly they have nothing to do. I have sent my boy," said he, " on to a farm to work during vacation and he works hard too. He thinks he is earning money but I know he is getting an experience that will do him more go d than ten times the money he can earn." That p rent realized that his son was being educated as much as beneficially by his out door work in vacations, as by the lessons he learns in school. But this is the point, that by his work in the field he gains a self reliance and habits of steady appliance, that make him an easy conquerer when he enters the school room.

Three-fourths of our best and greatest men come from rural homes. Our best working pupils to-day in the high schools, come from the country. Why? Because on the farm are lessons of industry.

On the farm duties must be done in their season, tasks must be finished after once begun, and the great quiet hopeful atmosphere of the country teaches a lesson of perseverance, freedom, faith in God and a dependence upon self.

The environments of the village with its depot and lazy curiosity of incoming trains, its business street with the never absent loafing places, the livery stable, the barber shop with its death dealing Police Gazette, and lower down the saloons with their miasmatic atmosphere, all are open to impress the vacant mind of the boy who has nothing to do but to kill time. Such influences educate downward; they graduate tramps.

Then in the cities and villages what a "mad craze for amusement" seems to be hedging even every benevolent society about, and their number is legion. The chief end of man so far as the young people are concerned should be changed to read: "To have fun eternally and enjoy it forever." I am no pessimist, but is there not in this endless round of pleasure parties, sociables to keep alive different societies and the various educational lodges and the literary meetings etc., etc., etc. A menace to clear thinking and thorough application in the school room?

The hopes and desires of the temperance reformer are divine. But when a juvenile lodge develops more evil than good in its innocent and yielding members, should we or should we not protest; protest against the indifference of parents as to the out of school education of their children.

What shall be done then with the boy who has run the gauntlet of the temptations and influences mentioned when September arrives and nine o'clock sees his shuffling form "creeping like snail, unwillingly to school". Admitting that he is an exception to pupils but not to schools, for we shall find such boys in nearly every school. But we are ambitious, we want our educational system to reach and enrich every boy and every girl. We want universal education in the right direction and we have an unpleasant feeling that the growing tramp evil, when tramps are so often gifted with some knowledge gained in schools, is not complimentary to all elements in our system of education. What shall be done with these exceptional boys then?

The inability of parents to correct errors long continued renders the very idea of using force absurd.

In the first place school is not the kind of medicine the boy needs. He should be put to steady out door work if possible, but if expelling such boys from school simply turns them into the street, then expulsion is a crime, whatever traits the boys may manifest to disturb the school, unless they can be sent to the reform school.

But I have no message here for the teacher, partly because what Supt. Nagle says is true. Hear him:

"The evolution of the teacher has not reached such a degree of perfection that we may truthfully pronounce him good. But he is so far in advance of the other members constituting the system of which he is a part, there is danger they will relieve themselves of the performance of those duties through which progress comes, impose them on him and hold him to a strict accountability for the trust."

I have been told that the child is a born naturalist and realizes it. The boy who hates the dull round of school lessons, the confinement of the school room, after so long enjoying perfect freedom to go and come as he pleased, might be interested in the study of nature, and so lead up to habits of industry and perseverance? Never, or, at least, hardly ever by the teacher alone. The problem is harder than that.

A recent writer in the *Illinois School Journal* says: "A great deal of this new education consists in setting the boy to chopping basswood with a good sharp ax when he ought to be at work on hickory, oak and and hard maple. Work is work and play is play.

Play study is a beautiful thing to fool doting parents with, but it dwarfs the intellects of the children."

The schools of Clay and Jackson and Webster were not better methods of making learning easier, nor teaching more dazzlingly brilliant to the occasional visitor, but many of the schools of the past were better in making work harder and so disciplining and toughening the will to intenser and more persistent effort: The boys must be held responsible early in life for duties performed.

They must be taught to stay with a job until it is done, all done, done alone, the litter cleared away and the room put in order.

The teacher can make his life more endurable for a time, especially if he be not troubled with remorse, by amusing instead of disciplining and training, but let no parent imagine his boy's faculties being educated to perform useful and successful life work, when every real duty makes him a shirk, and who never has any use for a task that makes him tired.

As a work most easily obtainable, most congenial to the boy's nature, and most productive of results in the way of habits of industry and honesty, horticulture stands first.

Of course there can be no way to reach parents who "love thir boys not wisely but too well, and who can not see the dear things suffer until they get older, etc., etc. Neither can we expect the improvident parent to provide such means of saving their boys; but the boys who have nothing in particular to do, nearly always come from wealthy parents who can afford, financially, to rear them in idleness. We all understand this.

The boy who is given a patch of ground to plant and care for, and who is assisted to stick to it until results are realized, is sure to get as valuable lessons in discipline, as he would in several terms of school. This is not unheard of, nor is it yet so very popular. (The work this society is doing.)

A father came to me not many years ago and said: "I want Albert to go to school; he is sixteen years old, undisciplined, soft handed and never has done any work. I know," said this parent, "that I should have set him to doing something but I've been away from home a good deal and his mother has no control over him. Now what he needs is disciplining, I set him to hoeing potatoes last week, and he stuck to the job until it was ended; he hurried it through so that it was not half done. I praised him for sticking to it, but I supposed I aught to have made him do the work right, but I hate to discourage the boy! Now I'll try and get him to attend school and I want him to work. I don't care so much what he does if he only gets out of that listless don't-care-a-tive way, and of giving up everything he undertakes after it's half done."

This parent is not an exception to this exceptional class.

In the first place the boy had inherited the father's tendency toward ficklemindedness, and by no system of training had the father tried to correct this evil in his son.

"A word to the wise is sufficient," but teachers must be careful when they undertake, in individual cases, to instruct parents how to manage their children.

The most glaring defect in our system of education, says Herbert Spencer, is the total lack of any instruction as to the rearing of children, the training of parents to be parents.

Teachers must shun the *entire* responsibility of the child's education. They must preach and protest against the assumption that the few hours of school life can train to habits of industry a boy who at home has never tasted anything but the sweets of idleness and amusement.

But teachers can do something in this line.

I have never succeeded in making such boys good thinkers and workers, but I have kept them in school and aroused their ambitions.

I have set them to work upon out-door tasks, which they performed better than their school room duties.

I have found them capable of managing a picnic better than some of their intellectual superiors.

I have found them willing to delve and tinker at an old second hand electric machine until they received as much benefit in real thinking as a good lesson in algebra would accomplish.

I have apppointed such boys upon an important committee, to their and the school's infinite surprise, and then labored with them, sociably until they worked in harmony with the sentiment of the school.

I have trusted them to the very limit of their strength, to find them growing stronger by the experience. I have charged them with ingratitude, but seldom or never with willful dishonesty. I have warned them against disgrace but seldom threatened them with bodily pain. But I have never found a cure for inherited evils aggravated by improper home management.

The question of education transcends all others, for the execution depends upon the training, the result of a system depends upon the intelligence of the people. When we engage a man to work for us we want to know only, *what can he do?*

All recommendations, all certificates and diplomas, are only so many ways he has of trying to indicate what he can do. But we are not certain of his value until we see him do things, and examine the results.

So with the boy. Is he learning to do things? Is he learning to bring all his faculties into harmonious action to accomplish definite results? Is he daily comprehending and expanding by doing? Then he is being educated. But if he is only pretending and assuming to do, if he is incapable of continued thinking, if he willingly rests with a duty half done, if he is clogged and cloyed with half digested intellectual tasks, he is not being educated but ruined and should be taken from the school room and set to *doing* something. In the workshop he can *feel* the answers to his problems. In the garden he can realize the relation between the weed dividend and the hoe divisor. He can comprehend the fruit product resulting from the multiplicand of seed by the multiplier of cultivation.

Finally let there be a more general and more intelligent recognition of the importance of out-door education by doing.

Let teachers keep up the demand for parental responsibility and we shall see better results from our schools, and the future citizen's respect and gratitude to his parents will be as sincere as they often are now ceremonial.

THE RELATION OF INSECTS TO PLANTS.

MISS MAMIE MYERS, Baraboo.

Insects are usually regarded as being injurious to plant life, but after studying the habits of these little creatures, we find we have many friends among them. Many of the beautiful plants with which we are now blessed could never thrive if it were not for the numerous insects which live about them.

As the old saying is. "It takes all kind of people to make our world," so it may be said that it takes all kinds of insects to make their world. Though some insects are obnoxious while upon others depend the lives of many handsome flowers, yet all have their special missions.

During the bright spring mornings in the early part of May, many larvæ first wake to behold the freshness of earth. There they lie upon the rich green leaves quietly enjoying the warm sunshine. After a few investigations, the new comers find the leaves to be very gratifying to their appetites. They devour this food with a relish and thrive upon it until they reach their maturity. During this time, they have unconsciously greatly injured the plant.

A little later in the season, after the corn has begun to grow nicely, the farmer discovers that some hills seem to be dying. Upon examining them he finds to his sorrow that the cut worms have come into his field and are noiselessly stealing his corn from him; this is not a pleasing discovery, but such trials must often be endured.

About this time, also large holes begin to appear in the potato leaves; the mischief maker proves to be the well known potato bug with which so many have had experience.

At the present time, one may observe in some fields of wheat, oats and rye, straws covered with hundreds of little black bugs; they greatly damage the grain until it is cut and then if there happens to be a corn field near they soon take possession of it. These are the much dreaded chinch bugs which are so troublesome.

During the summer months, brown spots may often be noticed in the meadows, pastures and lawns. The sweet green grass which early in the spring made them fresh and beautiful is dying; on upturning a small piece of sod, the large, white grub worms will be found working busily at the roots of the grass. So the poor little plants after doing their best to grow were obliged to give up in dispair.

We are very thankful to learn that all insects are not so vicious as to be continually robbing innocent plantlets of their lives. Many insects deposit their eggs either upon leaves or in stems, and the larvæ hatched from these eggs injure the plant. But some insects deposit their eggs in the ground and the larvæ instead of living upon vegetable matter, live upon larvæ which are harmful to plants The larvæ of the tiger beetle do much good as they destroy hundreds of worms, bugs and flies. Another faithful friend of plants is the little spotted lady bug. It is a great lover of those nuisances known to many of you as the plant and the bark lice. It is said that no agency known can destroy these little pests so fast. Bees, moths, wasps, and butterflies are equally well disposed towards plants. They are constantly doing good to the pretty little blossoms.

As the bee goes flitting about the woods in search of food, his attention is attracted by a pleasant odor; he at once sets out to discover the source of it, and soon finds it to be a pretty white flower; he lights upon the brim, and at the base of the petals perceives a rich store of honey; he sips it up, but as he flies away, he wears a little yellow cap put on unbeknown to him by the anthers of the flower. Soon after, he finds another white, fragrant blossom which tempts him to enter. As he does so, the stigma hits him on the head and knocks off his yellow cap. The bee is well pleased with his supply of honey, but he has unconsciously paid for it by bringing the fertilizing pollen to the blossoms.

It has been said, "If it was not for the humble bee, the crimson clover fields would be banished from our landscapes."

Insects are also greatly attracted by the bright colored flowers, for in them they usually find food, and the flowers in return receive the pollen which is brought to them from other flowers. But not all coloring of petals is for the purpose of decoying insects. The peculiar color of some flowers and the dark spots upon others protect their nectar from unwelcome insects. No insects visit a dull yellow flower or a spotted lily except the bee and flies.

Many flowers that are of a tubular shape and whose nectar is beyond the reach of all insects except the night flying hauk moth, bloom at night. As the little moth takes his nightly journey, he is often attracted by the gleaming appearance of some flower. As he approaches, he is greeted with sweet perfume and is soon invited to a feast of honey. After enjoying t, he leaves, carrying with him a store of golden powder which he deposits upon another blossom. In this manner, the evening primrose and orchids gain perpetuity through the visits of this little moth.

Not all insects are thus feasted; should it be their misfortune to light upon an insectiverous plant, they would be feasted upon.

If you examine the leaves of the pitcher plant which grows in our marshes, you will find numerous little bristles which all point downward. At the base of the leaf, you will probably find the bodies of insects. As an insect lights upon the outside of the leaf, he is made happy by finding honey all about him and the increasing sweetness of the honey entices him to the brim; from there, he wanders farther and farther into the leaf, little dreaming of evil; when he finally concludes to return, his trouble begins; bristles stick him in the face like so many bayonets and he is finally forced to remain there and die.

The sundew is another lover of insect food. It is a very small plant which also grows in marshes; its leaves are nearly circular and around its edges are little bristle like appendages, called tentacles, bearing on the ends what appears to be a drop of dew, but being really a gland giving out a peculiar secretion. When an insect is so unfortunate as to lodge upon a leaf, it is caught in this secretion; the tentacles quietly fold over it as one's fingers over the palm of the hand; as soon as the insect is made fast, more dew is secreted and the victim is rapidly disposed of. After the digestion, the tentacles straighten out again and are ready to embrace another fly or ant.

The Venus fly trap has a leaf whose shape resembles that of an opened steel rat trap; about the edges are little thorn like appendages, and in the center of each half of the leaf are three or four thorns. Instantly after an insect has settled upon the trap, it springs shut, the edges interlocking and so immediately putting the small prisoner to death. The plant is thus made happy by having a fat little bug for its lunch. An acid which is secreted by the leaf and poured over its surface, helps to digest the food.

Thus we have seen that some insects are injurious to plants while many are friends to them, but in either case, we find an interresting relationship existing between the insects and the plants, the one depending upon the other. The observation of their habits with relation to each other is very instructive, and should be pursued by more of the young people, especially by those who intend to engage in horticulture, that they may distinguish between their insect friends and their insect foes.

VIOLETS.

MRS. HUGH KELLEY, Baraboo.

"The essence of originality is not that it creates new material but that it invents new combinations of material " We know that Shakespeare's genius is at no other time so incontestably sovereign as when he borrows most— when he adapts or moulds the old chronicl s and "Italian originals" which awaited so long the hand that made them live and move. And then to march out of the dead level and do or say something thoroughly original is to be designated a "crank," an unenviable notoriety scarcely to be coveted. Therefore, if in this paper I keep in the beaten track it will be because of the abundance of material at hand and other reasons cited.

The violet is a well known flower, as it is found in most of the temperate regions Some botanists give as high as 200 species of this plant but it is doubtful if really half that number exist. Prof. Gray accredits about eighteen species to the region east of the Mississippi Three or four of these are found in Europe, and several are peculiar to the far west. Probably thirteen varieties may be found in this state

Nearly all violets are perennial with a short, thick root stalk. A few have a leafy branching stem. Others a naked flower stalk springing directly from the root stalk The seed pod when ripe breaks in three valves, the edges fold together and expel the seeds. A very interestin fact, and one not generally known, is that many of the rarer species produce, besides their showy flowers, others in which the petals do not develop These are hidden among the leaves at the root-stalk and produce seed more abundantly than the handsome flowers, thus mutely testifying to their usefulness while lacking beauty. Some of our violets are among the most showy to be found, but are either quite scentless, or with only a slight odor

The hooded violet is found all the way from three to twelve inches high. It is the most abundant species growing about here, and finds a home in low, damp or swampy ground; it forms large clumps of very fine flowers ranging in color from deep to pale violet and sometimes varigated with white. This plant gets its name "hooded violet" because the heart-shaped leaf has its sides rolled inward at the base when young, making a perfect monk's hood in shape.

The bird's foot violet is found next in abundance in sandy places, with large, pale lilac-purple flowers. The leaves are finely cut and of a beautiful gray-green. It is a lovely plant for the garden, flowering nearly all summer Sometimes the two upper petals are so deep and velvety in color as to resemble a pansy

Out west at the other side of the Rockies, this species is called larkspur violet. The only difference seems to be in the division of the leaves.

The arrow-leaved violet with bearded flowers, looking large for the size of the plant, is found growing in drier places, and named from the arrow-shaped leaf.

There is the lance-leaved and primrose-leaved violet with white flowers, the names derived also from the shape of the leaf. In the hairy violet the short stalked leaves lie flat on the ground.

The blind violet has s all white flowers, faintly sweet scented, and heart shaped or kidney-shaped leaves. The only yellow flowered species of this kind is the round-leaved, viola rotundifoliax. The petals have small brown streaks.

Among the leafy stemmed violets is our American variety of the European dog violet. This is a low plant with creeping branches and small light violet flowers.

The long spurred violet has the lower petal of the pale violet flower marked with purple lines and a spur full one-half inch long.

The pale violet and downy violet have spurs much shorter than the yellowish corolla.

The Canada violet grows from one to two feet high, having a very short spur with the petals white above and purple tinged beneath.

Several of the European violets are cultivated, the best known species being the pansy. The field pansy is a common weed in England, and is found growing like a native on our far western coast. The wild pansy is exceedingly variable and more than a dozen specie have been made by

European botanists. It is an annual, a biennial and sometimes a short-lived perennial. The flowers are variable in color, being purple, yellow or white; and sometimes all of these colors in the same plant. Many fanciful names have been given this species in different countries. Among them we find "Hearts ease," "None-so-pretty," "Nancy-pretty," "Love-in-idleness," "Kiss-me-at-the-garden-gate," "Johnny-jump-up," "Pink-of-my-John," and "Jump-up-and-kiss-me."

The cultivated pansy has been made very familiar as well as very popular by our specialist, Mr. Wm. Toole, who has an endless variety of this most beautiful flower. The sweet violet is widely distributed over Russia, Asia and Europe and is highly prized as a garden plant. This little plant is well known and universally loved for its sweetness.

A single flower will perfume a room with its delightful arom . It is perfectly hardy and flowers freely in spring. Plants may be increased by offsets and these may be transplanted in the spring or fall. The violet flowers well in the house in winter if not kept too hot and dry. In order to raise from seed it is necessary to sow the seeds as soon as ripened, as even in a few days they loose their germinating power. For this reason they are not offered for sale by seed men.

In cold climates like ours, by a little proper management flowers can be obtained plentifully at the close of winter or early spring. In order to have success follow the instructions given for pansy culture, by specialists and success will be assured. With cultivation many varieties are produced, mostly double, and varying in color from white to dark purple. The Nepolitan is not a hardy variety but used much by florists on account of the many flowers produced. The horned violet is used largely for bedding purposes in Europe It produces large pale purplish flowers, but is not often found in this country as our hot summers are injurious to it.

Aside from the beauty of this flower, and Scott tells us:—

> The violet in her greenwood bower,
>   Where bircnen bough with hazels mingle,
> May boast itself the fairest flower
>   In glen, or corpse, or forest dingle—

I will mention some things for which it is used:

From the roots are produced an emetic called violine. Sirup of violets is largely used in medicine, especially for infants. This sirup may also be used as a test for acids and alkalies. The viole comes sixth on the list in strength for perfumes. At Nice, violets and mignonette are grown in immense quantities for this purpose, giving employment to numbers of people. Solomon says: "Ointment and perfume rejoice the heart," showing even in ancient times in what high estimation perfume was held. Ancient physicians are said to have prescribed this as medicine. It is also stated by good authority that after the destruction of the clove tree on the island of Ternate, the colony suffered from ravages of diseases, before unknown. Also that employes of perfume factories escaped cholera when that dread disease was epidemic. Egyptians used perfumes and ointments for embalming their dead, as well as for domestic uses. In the ancient tombs many of the ointments and perfumes are still found in boxes of various material, and strangely enough a few still retain the scent. We find in Exodus where Moses is told to prepare the oil of holy ointment from the principal spices—myrrh, sweet cinnamon, sweet calannus, cassia and olive oil "compounded after the art of the perfumer."

The Phoenicians, Assyrians, and Persians of antiquity are known to have made extensive use of perfumes as well as the ancient Greeks and Romans. The Greeks frequently annointed themselves twice and even thrice a day with pomatums and perfumes. Even their wines were perfumed by infusing into them violets, roses and hyacinths, the beginning perhaps of alcholic perfume. In ancient histories we find very full accounts given of the extraodinary varieties of perfumes used under different Roman Emperors. Fragrant tapers and incense were used in the Catholic church as early as the year 496. During the middle ages France and Italy were conspicuous for the manufacture of perfumes. In England during the time of Shakespeare and Dean Swift, perfumes were very fashionable and the shops a resort for loungers Paris and London are now the chief centers of the manufacture. The south of France is especially adapted to the growing of aromatic plants. In the United States many essential oils are prepared from wintergreen, sassafras and other sweet scented plants. Fruits, seeds, woods, flowers and vegetable products are used, and by skillful combining, scents are obtained, which imitate the odor of flowers which are not themselves used in the preparation. For instance, the genuine heliotrope is not so fine an odor as the imitation. The latter is known as white heliotrope and is made from a combination of violets and vanilla and has a soporific tendency if breathed for any length of time. The distinguishing mark of the violet in perfume is lightness and purity, while that of tuberose is strength. The rose geranium makes an elegant perfume nearly as good as attar of roses. The lily-of-the-valley produces one of the richest perfumes, while lemon, orange and daffodil are very fine

Although the manufacture of perfume or the growing of flowers is nothing in this country to what it is in Europe, it will doubtless surprise many persons to learn that the nursery of floral interests in the United States now reach a value of nearly $42,000,000, and claims and empire of more than 170,000 acres. In the last ten years the popular love for flowers has grown to a remarkable extent. Its significance is more apparent when we remember that prior to 1800 there were but two nurseries in the United States, one of these in New York, the other in Connecticut.

The flower market in Covent Garden is greater than any we have, but the general price of flowers is one-third less in New York than in London.

John Borroughs claims a greater per cent. of our native flowers are odoriferous than those of Europe. Of the 4,200 kinds which grow there only 420 or ten per cent. are fragrant. The commonest flowers are the white ones of which there are 1,194 kinds Less than one-fifth of these are odoriferous. Of 951 kinds of yellow flowers seventy-seven are sweet scented; of the 823 red kinds eighty-four; of the 594 blue kinds thirty-one of the 308 violet blue kinds but thirteen are fragrant.

Schubeler, the Norwegian botanist, states that flowers that are white in the south become violet in the far north And nowhere else is found so intense a blue violet as in Norway.

"Sweet flower, where'er thou be,
In valley, or woodland free,
Thou, by thy sweet modest face,
Hast in our hearts won a place.
Spring in her train ne'er can bring
A more welcome offering
Than blue violets

Moved by the secretary that Miss Myers and Mrs. Kelley be elected honorary members of the society for the ensuing year. Carried.

A. J. Phillips—I wish to say something about the second paper that was read, for it appealed to me forcibly (*Out Door Education by Doing*). I keep my boys away from the livery stables and manage to keep them busy on the farm. I took my oldest boy to the state fair last fall and he learned that to raise apples and beat such men as Mr. Hirschinger he would have to work. I think if you would all read and re-read that paper after it is published it would do you all good. I think the paper ought to be commended.

Motion made and carried to make Prof. Chester W. Smith an honorary member; of the society.

Adjourned.

THURSDAY A. M., June 30.

Vice President Toole in the chair.

THE EVAPORATION OF FRUITS.

By PROF. E. S. GOFF, Madison.

Prof. E. S. Goff.—I have not prepared a formal paper on this subject but I have taken some pains to look up the markets, and will give briefly some of the figures. The price taken was in January of each year and in the New York market.

In 1886, the market price was	15–18½ c. per lb.
1887	17–18 c. per lb.
1888	22–24 c. per lb.
1889	18–21 c. per lb.
1890	22–24 c. per lb.
1891	29 c. per lb.
1892	15–16 c per lb.

The average is about 18 c. Only in the last year can the producers of evaporated raspberries be said to have lost.

I can see no hope of any profit in evaporated blackberries.

I will close by reading an extract from *The Rural New Yorker.*

[Extract from Rural New Yorker, 1891, pages 48, etc.]

THE EVAPORATED FRUIT INDUSTRY.

[A conversation between Chas. A. Green and Mr. Doyle, the best posted man in western New York regarding dried fruit.]

“Mr. Green: ‘What about the fall in price of evaporated black raspberries? Why has the price been so reduced.’

“Mr. Doyle: ‘The evaporated industry has about reached its maximum development in western New York. Some years ago, perhaps five or six, evaporated apples and evaporated raspberries were the only dried fruits prepared in the eastern states and offered to consumers throughout the entire country. The result was that with the improved methods of evaporation they became very profitable, and not only were they used in large quantities in this country, but also abroad. In the past three or four years California has become such a prominent competitor for business and has such a variety of fruits of such a fine quality, so different from ours in the east, and at comparatively low prices, that the buyers and dealers throughout the country have said ‘We want a larger variety for our people; we have grown tired of the same fruits;’ so that California fruit products have rapidly come to the front.’

" 'Is not New York the natural home of the raspberry?'

" 'Yes, but it seems to grow as well in California, though it is not grown there yet to any considerable extent.'

" 'What are the principal evaporated fruits of California?'

" 'The apricot, peach, prune and nectarine; dried figs and raisins are the principal fruits.'

" 'Can the fruits you name be produced there cheaper in proportion than our evaporated black caps here?'

" 'A large proportion of the expense is in curing. In California the process of drying is principally carried on by the natural heat of the sun. growers have a more favorable climate for curing and have less to fear from injury to their crops by the action of the elements, and the climate is more even and more regular than ours, affording a better and much longer period to harvest the fruit. This, with their method in drying, gives a great advantage in cheapness. Besides, their system of irrigation is very conducive to success in the production of these and other fruits. They produce a very good quality, but their fruits do not possess the boquet or flavor of our eastern kinds.'

" 'Then it would seem that the reduced price for black caps will continue?'

" 'Unless the area devoted to their culture should be decreased. The present price is from thirteen to thirteen and one-half cents per pound—values as low as ever known.'

" 'The cost of production is greater than that, is it not?'

" 'The cost is from 18 to 20 cents per pound under the most favorable conditions.'

* * * * * * * * * * * * *

" 'Where is the center of the black raspberry industry?'

" 'Three-fourths of the production of the United States is confined to three counties of New York—Wayne, Yates and Monroe.'

" 'Why is the dried blackberry so cheap as compared with the raspberry?'

" 'The blackberry is produced largely in the southern states, gathered by the colored people at simply the expense of gathering. It is dried by the heat of the sun, and as it grows abundantly there it is produced at the least possible cost.'

" 'To my mind the blackberry is superior to the raspberry; is it so considered generally?'

" 'Many people prefer it to the raspberry in the dried form. It is, however, very much inferior because the drying is poorly done. A large percentage of the fruit coming from the south being more or less fermented. Its poor quality causes the low price.'

" 'A good quality would probably bring higher prices?'

" 'Yes slightly higher, but the trade of the country has become so accustomed to using this inferior grade at the low values that dealers will not pay without great reluctance much higher prices.'

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"'Then in your opinion in proportion as the production of raspberries is decreased the price will increase, but perhaps not sufficiently to warrant planting now?'

"'The price will undoubtably increase if the production is decreased. The object of the grower of raspberries should be to sell his crop in the fresh state, for it is only at a time of a glut when the canning factories will not buy them and when the consuming markets have sufficient that he can dry them with any hope of getting a profit from their sale.'

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"'Small fruits should be mostly sold in the fresh state, especially red and black raspberries and fine quality of blackberries * * * The evaporator should be employed to utilize the surplus product, that which cannot be easily marketed.

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"The tendency of those engaged in evaporating for the past few years has been to produce inferior grades and I think this is a great mistake. Buyers are now reluctant to purchase qualities which might have been considered prime and merchantable some years ago. The consumer demands a higher grade of every thing in the evaporated fruit line. He wants better varities, better qualities, aud he wants them prepared and preserved in the best possible manner. It is very difficult to find a market at any price for fruit that has not been properly cured or that has not been sufficiently dried.'"

"I think perhaps I have covered the ground as the outlook does not seem to be very encouraging."

DISCUSSION.

Geo. J. Kellogg—If we are going to have such summers as this the season will do the evaporating fo blackberries. I have already dug up the Triumph and I think we will have to get the berries before we go into the evaporating business.

J. S. Harris—Over a week ago in Minnesota everyone thought we were going to have so large a crop of black cap raspberries that they would not hardly pay the expense of boxes and picking. Just before I came away my attention was called to the black cap and since the rust has struck them I think there will hardly be enough left for the birds. I think our production so soon regulates itself that it will not pay anyone to go into the business of evaporating berries.

Wm. Toole—By the discussion brought out this morning it does not seem that it would warrant anyone in going into the business. There is a very wide margin between the wholesale and retail producer and the only reason why some might be encouraged is in a hurrying time, or when Sunday comes and you do not feel like having a very great amount of work around, then it might be well for us to be provided with the facilities for evaporation. It is well to regulate the home market to a certain extent, also, and although I do not believe in making a corner on the market, yet you know there is a time when people who want to can fruit will wait until such a time as you will almost give away your fruit, and then is when it will be profitable to resort to evaporation. You can easily fix an arrangement of trays covered with mosquito netting for the purpose and you will be surprised to see how readily fruit can be dried.

Secretary read the following question sent by some one in the audience: When is the best time to prune shade trees, in cities, elms, hard-maple and evergreens ?

Prof. E. S Goff – In the spring; any time up to this time; any time when they are growing rapidly.

Question—Would you prune a soft maple in the spring; is it too late to prune them now?

Chas. Hirschinger—I should prune before the foliage is all out full. If you wait until the sap is all up, it is better than to prune before the sap leaves the roots, because if you do not when the sap ascends, it will run out of the limbs.

J. S. Harris—The maple, birch, and some others are better if pruned after the surplus sap has been taken by the leaves.

Prof. E. S. Goff – Our ideas have changed in the last few years; the idea that the sap all moves up at one time and down at another is all exploded; there is no more of a movement at one time than another.

A. L. Hatch—What is the large flow in maples in the spring?

Prof. E S Goff—It is a solution that is in the tree.

A. L. Hatch—Is this flow a solution of starch, sugar, etc., that is already there and no coming of sugar out of the ground?

Prof. E. S. Goff— Yes it is. Water disolves the sugar; the water is just the same as the water from the ground. A snow storm makes it run more freely because the sudden change cools it; then when the sun warms it again it starts more freely. It moves down instead of up as we have usually considered it, because the sun warms the branches first.

Discussion—"The Columbian Exposition"—Opened by the secretary.

I feel that on this subject I shall take up too much of your time, because it is a subject that belongs more especially to our society than to a mixed audience.

Midway Plaisance is a strip of land connecting Washington and Jackson Parks, two hundred feet wide and three-fourths of a mile long. This plot of ground is where all trees and nursery stock is put out. It seemed this spring to be very urgent that the trees belonging to Wisconsin should be planted out. Prof. Goff and I made out a list and Mr. Springer was to put them out. Our plan was to take one each of the most prominent seedlings and one each of our own varieties of apples that succeed here; this list swelled up to four or five hundred. I went down last week to get all the information I could to present to you at this meeting, but the recent heavy rains made it impossible to reach the grounds. Mr. Thorpe said everything was looking finely and that no state except Colorado and Nebraska had put out anything.

Just at the time Mr. Springer was engaged to do this work I received a communication from Mrs. Lynde and found that she had, some time last fall, engaged a Mr. Dunlap and asked our society to furnish him transportation throughout the year. Soon after this I met the Board at Janesville and explained the matter to them. It seemed to me that it was a little inconsistent for us to have the charge of the work and they hire a man to do it. They then put the whole of the work into the hands of our society and set aside $5,000 out of the $65,000 for us to work with.

Mrs. Lynde had arranged to pay him three dollars per day and all expenses including mileage; he sent in a bill for $90.00 which I thought could not be correct as there were not thirty working days in May. Since then I have received a letter from Mr Dunlap stating the amount he would do the work for (i. e , that of preparing a botanical collection of Wisconsin plants) and if any premiums were awarded he wanted them to go to him It seemed to me an unnecessary expense to have this collection made. The Board of Commissioners have made that contract with him, yet we can dismiss him if we wish to, although Mrs. Lynde was very anxious that we retain him. I asked Mr. Thorp what other states were doing, and he replied that few states were doing anything with such a collection. Mr. Samuels desires that all exhibits should come as an exhibit from the Wisconsin Horticultural Society, and not as individual exhibits, although the individual is not lost sight of. It can be decided what share of the premiums the individual shall have. The advantage of this proceedure can be readily seen: If you make it yourself as an individual exhibit you would be to the expense of it, while if the state does it, it will be no expense to you.

Some four weeks ago I published in the Wisconsin Farmer some plans illustrating the method of transplanting trees, from Mr. Samuels. I think we shall have to transplant some large trees to make the exhibit what we wish it to be. Michigan will transport a large orchard of peach trees in boxes. Cranberry growers will have plats in sections and will have the cranberry bog in sections, transplanted in boxes. The plat of ground is reserved for them and they will have the berries growing. Mr. Loudon expects to transport his strawberries in much the same way. Mr. Thayer has his there. The only mistake we made was in not sending in a dozen best plants instead of six, for some have died, as will always be the case.

Those of you who have never visited the grounds can have no idea of the immensity of the World's Fair, and if I say to you, the Horticultural building is the finest, do you not think I say this because I am a horticulturist.

Railroad companies have made arrangements to charge full rates one way and return exhibits free.

California has made an agreement to pay one-half rates one way and one-half return. A large amount of our stock will be perishable, and of course will not have to be returned.

I received the following letter concerning the amendment of the railway rules:

[Referred to Committee on Resolutions.]

I wrote to the Florist Club of Milwaukee, and Mr. Currie replied that the club had taken no action with regard to making an exhibit and thought the expense would be more than they would receive from it. I think we should encourage an exhibit from the florists because if we make the exhibit which we have contemplated and already begun we shall have to make an effort to do it. I met Mr. Brackett and was glad to do so because he has a reputation of being the best maker of wax fruits in the United States. Everything is being prepared for keeping our surplus in cold storage and there is really no object in making wax specimens.

Mr. Hatch called for president Thayer's report and he replied: "I have no special report to make." Mr. Samuels thought the handling of the exhibit could be done by members of our society.

Secretary—You can readily see that fruit would be worthless if we could not get it out of the way and get fresh to put in its place each day, and we will do extremely well if we are able to do so.

Of course these matters of minor importance cannot come up now for a decision but they will come up for consideration later. It has been proposed that we sell our berries and replace them with fresh ones as long as the season lasts.

Strawberries lying on the tables one or two days would have no market value.

A. L Hatch—Suppose they were put in glass cases, would'nt they have a market value?

Secretary—Mr Samuels says, "The application for space is ten times more than they can give. It would not be practicable for us to occupy so much space as we would have to if we put our berries in glass cases.

A. L. Hatch—I suggest that Prof. Goff formulate circulars telling us how to put up our fruit in the best possible manner

A. J. Phillips—We think when we make our exhibits in Wisconsin that we are an awful state and I guess we are. I looked around when I was in Washington to see how many of our specimens Mr. Brackett had made casts of and I found that he had made just one specimen and that was of the McMahon and it said "From Wisconsin," not mentioning any particular county or district. This country is too big! You must not expect so much.

Geo. J. Kellogg—In regard to the lay out of the ground, Mr. Loudon wants o know if he can have a certain amount of ground next month?

President—Mr. Samuels assurred me that Wisconsin could have all space that was wanted for such work. I wrote to Mr. Loudon to that effect.

There seems to be a good deal of discussion about whether we can dispose of our fruit or not. I am of the opinion that we can; whether it will be practicable to do so we can only determine by trial. You will understand the exhibition of strawberries will not be from all over the United States at one time; it will be divided in sections, possibly Michigan, Minnesota and Wisconsin will be grouped together and given an opportunity for a large exhibit.

Geo. J. Kellogg—Why cannot table room be used for apples?

Secretary—There has been no allotment of space as yet. Ten times as much has been asked for as there is available and we shall have to be apportioned.

Wm. Toole—I am glad we have had the thought brought out that we may have the status of individual exhibits and help the dignity and fame of the state and therefore I think we had better do it because it will be less expense to the individual.

Chas. Hirschinger—I want to ask just one question. I have been informed that although I should desire to make an individual exhibit, the first day of July is the last day on which any indivudal could apply.

Now suppose I wished to make an exhibit. would it be necessary for me to do anything with regard to securing space or would I have a chance in the space assigned to the state?

Could there be a collection exhibit made from all over the state and would I have to make application for space?

President—You would make application to the state. It is desirable, so far as possible, that our exhibits be made as a society all the way through, but that our individuality as growers be retaine', and whatever premiums are awarded each shall receive his share; the state exhibit shall be for the general benefit of all.

Geo. J. Kellogg—One question we need to deal with is whether we shall hold in cold storage for next summer, and I think we should formulate those plans at this meeting. I move that Prof. Goff and Mr. Hatch be appointed a committee to formulate plans for presentation and preservation of our fruits.

Secretary amended by adding the name of A. J. Phillips and the motion was carried as amended.

Prof. E. S. Goff—As that motion was worded, a committee ought, also, to be appointed to collect fruit.

Geo. J. Kellogg—I move that the plan for collection of fruits be referred to the same committee, and if this committee see anything to report at this meeting I wish they would do so, if not, report at a meeting at the state fair.

Motion prevailed and discussion closed.

REPORT.

To the President and Members of the Wisconsin State Horticultural Society: Your committee on award of premiums for strawberries have examined the fruit on exhibiton and would respectfully report the following awards:

Best and largest display of strawberries:

Geo. J. Kellogg, first premium	$4 00
M. A. Thayer, second	2 00

Best quart of strawberries:

M. A. Thayer (Warfield), first premium	1 00
E. Snyder (Jessie), second	50

The sum of fifteen dollars is appropriated for the use of the committee on fruit, to be awarded on best quart of such varieties of strawberries, not to exceed fifteen, as may be considered worthy of cultivation by Wisconsin fruit growers.

For awards under above provision:

Geo. J. Kellogg upon plates of the following varieties, one dollar each: Sandoval, Sadie, Crawford, Wood, Eureka, Parker, Earl	$6 00
Geo. Hanchett and sons, one dollar each on the following varieties: Haverland, Van Deman, Michels	3 00
E. Snyder, Buback	1 00
V. C. Mead (plate of new variety), Mead	1 00
P. Crosby, Monadnock	1 00
F. W. Loudon, Seedling No. 2	1 00

We would recommend the name of Monadnock be changed to an easier one as the variety is one of evident promise and would suggest the name of Crosby in honor of the originator. We would also recommend that

Mr. Loudon's No. 2 receive a name as it appears very interesting. We recommend his display of thirty-five varieties of seedlings. We also recommend the highly instructive exhibit made by Prof. Goff from the Experiment Station at Madison, consisting of sixteen new varieties.

Respectfully submitted,
A. L HATCH,
J. S. HARRIS,
MRS. HUGH KELLEY,
Committee.

Report of committee adopted and name of Monadnock changed to Crosby.

REPORT OF COMMITTEE ON PLANTS AND FLOWERS.

Your committee respectfully submit the following report:

Best collection house plants:	
Mrs. S. S. Grubb, Baraboo, first premium	$3 00
Best collection green-house plants:	
Arthur Elliot, Baraboo, first premium	4 00
Best collection of native ferns, mosses and other wild plants:	
Willie Toole, Baraboo, first premium	2 00
Arnold Wackler, Baraboo, second	1 00
Best show wild flowers:	
Willie Toole, Baraboo, first premium	1 50
Best show potted ferns:	
Arthur Elliot, Baraboo, first premium	1 00
Best specimen potted plants, any variety:	
Arthur Elliot, second premium	.50
Best show moss roses:	
Geo. J. Kellogg, Janesville, first premium	1 00
Best show native orchids:	
Arthur Elliott, first premium	50
Best hanging basket with plants in variety:	
Wm. Toole, Baraboo, first premium	1 00
Best bouquet of white roses:	
Arthur Elliott, first premium	50
Geo. J. Kellogg, second	25

Best bouquet of roses:	
Geo. J. Kellogg, first premium	50
R. B. Griggs, Baraboo, second	25
Best collection fuchsias:	
Arthur Elliott, first premium	1 00
Best show pansies:	
Wm. Toole, first premium	1 00
Best collection foliage plants:	
Arthur Elliott, first premium	1 00
Best show pilargimums:	
Mrs. Wm. Toole, first premium	1 00
Best show cut flowers:	
Mrs. Wm. Toole, first premium	1 00
Arthur Elliott, second	50
Best show of roses not less than ten varieties:	
R. B. Griggs, first premium	1 50
J. E. Wright, second	1 00
Best collection fringed petumas:	
Mrs. Wm. Toole, first premium	1 00

REPORT OF COMMITTEE ON VEGETABLES.

Best exhibit of garden vegetebles:	
Arthur Elliott, first premium	1 50
Best half dozen heads lettuce:	
Arthur Elliott, first premium	50
Best half dozen bunches radishes:	
Arthur Elliott, first premium	50
Best half dozen bunches onions:	
Arthur Elliott, first premium	50
Best six stalks pie plant:	
Arthur Elliott, first premium	50

W. B. HAZELTINE,
N. W. MORLEY,
Committee.

President M. S. Thayer offered a special premium of twenty-five strawberry plants to every child who would arrange and place a bouquet for exhibition on the president's and secretary's table, and the committee on special premiums reported the following entries: John Neider, Harry Moore, Arnold Wackler.

CHAS HIRSCHINGER,
A. J. PHILLIPS,
J. S. HARRIS,
Committee.

THE DUTY OF OUR STATE LEGISLATURE TOWARDS THE WISCONSIN STATE HORTICULTURAL SOCIETY.

PRES. M A. THAYER, Sparta.

As a nation advances in civilization, the necessity for State aid to many objects of public welfare, educational, charitable, or business, becomes apparent.

The old time "district school" with a teacher at $12 per month, and "boarding round" has been supplemented by our magnificent free public schools, colleges and universities. Within a few years charitable institutions of all kinds have been fostered and maintained by public aid, not for charity alone, but as the duty of a great state to its own citizens.

As a matter of business, public moneys are freely appropriated to improve our rivers, harbors, highways and other means of traffic.

Enterprising cities desire more business, more population, and straightway large bonuses are freely offered for the establishment of manufactories within their limits.

State aid is freely given to county and state fairs, and liberal premiums offered to encourage attendance and competition.

Better methods of farming are required by the argiculturist to keep pace with other great progressive interests, and a new department is added to our government; a new course to our university with scientific educators to preside.

Farmers' Institutes are established in every county, under the direction of best practical agriculturists, wherein our progressive farmers take part, and their best experiences are published in book form for general distribution.

The horticulturist should be entitled to a session in every Farmers' Institute, and receive state aid therefor.

"Reciprocity and Protection" are not necessarily political terms, and should be the watch-word in every progressive state.

Legislators should aid and encourage all well defined objects of public good by liberal appropriations of public money.

The moneys expended for state agricultural or horticultural aid is reciprocated by the people; millions of dollars are annually added to the wealth of the state in stock, crops, improved methods of work, etc., etc.

Seeds of new grains, grasses and vegitables are sent out from the department free to all.

Experimental Stations are established, and public officers are constantly on the watch for diseases of animals, grains, fruits and vegetables with proper remedies

Even the weeds by the wayside, the birds of the air, and the fishes in our streams and lakes have their public guardians and executors.

An intelligent thinking people unanimous in saying "this public aid is right, and should be increased," and yet there is one great industry, one of the most important of all to Wisconsin, that is practically without this aid.

Few realize the magnitude of horticultural investments, and the enormous productions from them. It is estimated from late statistics that more than a million dollars are invested in growing fruits for commercial purposes, and the total value of products must considerably exceed this amount.

In addition to this we are sending more than fifty millions of dollars every year to foreign lands for their fruits and nuts.

Wisconsin alone is paying millions of dollars annually to other states for fruits that can be largely grown at home.

We have one of the most natural fruit states in the Union, and with reasonable state aid to develop our natural resources, would not only produce our own fruit and save the money now sent away, but lay other states under heavy contributions for our surplus productions.

The development of horticulture in Wisconsin has been a long continued struggle, and most of our oldest and best workers have given their long life, time, money and energy to the cause and are now poor. We have their experience, and to a great extent it is no longer experimental.

We need state aid as a necessity, to place this experience with every citizen.

We have established a few Experimental stations, but need many more to properly test new varieties and their adaptability to our different soils, climates and locations.

New and improved methods of culture and management are being introduced. The state should assist in carrying out the work, that her citizens may know what to plant, when to plant and how to plant for best results.

It would protect our people against snide agents and unprincipled dealers; it would build up a thriving industry in many villages and give employment to thousands of poor women and children; it would give health of body, and peace of mind to many frail constitutions and overtaxed brains.

It would create a respect for rural pursuits, stimulate the moral sensabilities, and add to the love of the beautiful in nature.

Horticulturists of Wisconsin, is it not a duty we owe to thousands, who are wanting information in our line and the great work we follow, that we strongly urge upon our legislators the necessity for a reasonable appropriation in aid of this good work?

Legislators of Wisconsin, we have a great state, rich in agriculture, manufacture, water-power, timber, minerals and all the natural resources to make a rich and prosperous people.

Our debts are all paid and we have money to loan. Our tax is nominal. The railroads within our border are paying into the treasury, taxes amounting to a million a year or nearly $3,000 daily. Other large resources are at our command and yet you pass the great horticultural industry with a mere pittance. We ask in the name of the State Horticultural Society, and the thousands who eagerly read our reports and seek more information, that you hereafter place in our hands sufficient money for this work.

Give us the tax on railroads for a single day each year, and Wisconsin shall become noted as a fruit growing state, with all the benefits to be derived from this great industry.

Secretary—One day when in conference with Prof. Goff I asked him whom we should get to write a good, strong paper on that subject and he decided Mr. Thayer was the man to do it. I am glad he has given us the paper.

HORTICULTURAL IMPROVEMENT SOCIETIES.

By REV. J. SCHOLFIELD, Evansville, Wis.

Webster defines horticulture as "the art of gardening," but that seems, by far, too narrow a definition. True, it embraces kitchen and flower gardening, but it also includes the orchard, vineyard and green house. But in addition to these, it includes artificial forestry, park and cemetery adornments, improvements of church and school grounds, lawn and street and roadside—indeed as Shakespeare says "It is an art that doth mend nature." It smoothes down all rough places, and surrounds one's homes with beautiful lawns, flowers, and greatful shade, which are not only pleasing to the eye, but educating and refining to the taste.

Improvement is a watchword of our time. We are not satisfied with anything—we must make all things better than they are to-day; even nature herself must be trained and improved.

But why societies? Because while one man can do much, two can do more, and twice two well organized amount to more than four.

Who will say that such societies are not needed? They are needed everywhere, in every township, village and city, for in every place improvements are needed. In no single village or city, have the best sanitary and æsthetic conditions been secured, and until they have, such a society is surely needed.

1. Horticultural Improvement Societies are needed for the information they will impart. We all know something, but no one of us knows it all. "Live and learn," must be our motto. Each one of us can see where some improvement is needed, and perhaps, how to secure it.

I am embarrassed by the large number of illustrations which rise in my mind here. Take, for instance, the planting of shade trees. How seldom one sees just the right kind planted, and perhaps as rarely are they planted in the right way.

We are impressed by the fact, that people very rarely consider the relation of trees to their individual health and homes. We need societies to spread information on these points. Diffusion is the great law of American life—if we have this knowledge we ought to impart it to others. Our communities need to be enlightened on these things. How important it is to know that both the atmosphere and soil are cooled and moistened by the presence of trees. Not only do they cool the air by excluding the sun's rays; they moisten it, by drawing up the water from the subsoil. Besides this we must bear in mind that the leaves and branches of our shade trees collect a considerable amount of rain.

A French scientist, (M. Fantiat), has shown that "the leafage of leaf-bearing trees intercepts one-third, and that of pine trees one-half of the rainfall, which is afterward returned to the atmosphere by evaporation. On the other hand, these same leaves and branches restrain the evaporation which reaches the ground."

While pine trees collect the greatest amount of rainfall, they permit the greatest evaporation from the ground, and their branchless stems offer the least degree of resistance to the lateral circulation of the air. It is easy to see what an important bearing all this has on personal health. Shade trees are often planted so thickly on the west and south sides of the house as to exclude the free access of sunshine, and the health-giving west winds. Others plant them so near to the house on the east side as to totally shut out the morning sun from their bedroom windows during the shorter days of the year.

There are still others who avoid these faults by going to the other extreme. These homes are bleak and bare, not a tree or shrub near enough to turn the burning rays of the sun in summer, or stay the cold piercing winds of winter. Upon this, and a score of other points we need to scatter information—all will gain by it, and no one will be a loser. I know of no method of doing this which equals in efficiency that of Horticultural Improvement societies.

2. They are needed for the inspiration they will give us to practice the things we know. There is always inspiration in numbers, and one or two enthusiastic men or women can set a whole crowd on fire. One person has a nice lawn and grounds; this stimulates his neighbor, and if he can get a dozen men and women together in a society and enthuse them, these twelve will become a center of influence which will radiate throughout the town or village, and very soon a marked improvement will be seen. The village will be benefited in several ways. It may not be seen immediately in dollars and cents, but it will be ultimately felt in that direction. It will very speedily be seen in the improved appearance of the roads, streets and residences. This will attract the attention of people who visit the village and lead them to think of it as a desirable place of residence, and in this way increase the value of real estate.

It is often hard to get practical men to believe that it pays to give attention to ornamental improvements. The value of shade trees can't always be settled with figures. The Rev. E. P. Powell in a recent issue of a New York paper gives a most interesting experience in this direction. His old parental home situated ten miles from Utica, N. Y., consists of twenty-five acres, and would not keep a horse, a cow, and three people. It was offered for sale for $3,000, but did not find a purchaser He bought out the other heirs, sold off four acres, and set to work improving the twenty-one acres left. He laid out the whole as a landscape garden. He was laughed at by his neighbors for making fancy roads and lawns, and planting so many trees and flowers. A purchaser for eight acres soon appeared and paid $250 per acre—$2,000—a price unheard of in that district. In a few years the place became famous for its beauty, and he has since sold four acres more for $5,000, leaving him nine acres and his cottage. He cultivated the beautiful and made it pay, and I think the more beautiful we make our villages, the more will their value increase. Perhaps in a more direct way these societies may be of great value financially. I saw a statement the other day that over 30,000 people are engaged in horticultural pursuits in southern Illinois, between Centralia and Cairo. Now how much fruit does your village or city ship in, that could just as well be raised at home and freight charges saved? Here is a field in which the influence and inspiration of these societies may be most beneficial.

3. What shall I say of their power as moral educators? I believe that men are raised to a higher level by familarity with nature. I know of nothing so calculated to effect us with wholesome influences, or to fill

us with purer sentiments, or holier aspirations, as the love and study of nature.

To improve our school grounds by planting trees, shrubs, vines, etc., will certainly stimulate our children to observe and think and love the beautiful. The presence of flowers, trees and shrubs do much to help refine the tastes, develop love of the beautiful, and build up lovable characters. The influence of beautiful school grounds will abide with our children, and like good leaven, will work through life. I was born in a garden, and the influence of that garden and of the surrounding hills and woods will live with me forever. If this was the only result, it would be worth while to organize societies and to spend money and time for it. We take a deep interest in the development of our mechanical and manufacturing industries, and that is right, but the best productions of any nation are its people. Why then, should we not take as much pride in our homes and schools as in our factories?

I think there is plenty of room for missionary effort in this direction, and a society of twelve live men and women can do twenty times more than any single individual. It may take time and effort to educate our communities up to this, but it will pay. It has always cost to get anything of real value, for what cost nothing is generally worth just what it cost.

It may be true that some things cost more than they are worth, but this is never true of the highest and best things. If we will do this work in a true spirit, we shall receive a glorious reward—the conscious-that we have worked for the benefit of the race. Such work is noble, and noble work can never die. He who works to establish and sustain Horticultural Improvement Societies is both a patriot and a philanthropist.

DISCUSSION.

Secretary—For the benefit of those present I wish to say there have been several new societies organized during the last year; of the juvenile societies there is an army. The work this year is just the beginning of what we shall do. Three years ago I laid the matter before the state superintendent and he did not seem willing to do anything about it but under the new regime they took hold of the matter and almost took it out of our hands. At this time a telegram was received from the signal service fortelling the approach of frost.

President Thayer exhibited some bushes of blackberries, and explained his method of tying and pinching. It is generally supposed you should never pinch the laterals of the blackberry or the raspberry.

Last fall I pinched all the laterals back and the result was I had a tremendous growth of new laterals.

Geo. J. Kellogg—I do not see any object for a second pinching. If we had an unpropitious season the fruit might not mature.

M. A. Thayer—I do not think there is any danger of pinching blackberries or raspberries too low. Mr. Hanchett had some killed back by frost in the spring and we never had so find a crop as we had that year.

Adjourned.

ALL ROUND THE YEAR.

By IDA E. TILSON, West Salem.

Many poets have celebrated that annual procession of flowers which we see, from radiant easter lilies to sturdy chrysanthemums, named "Christmas roses" by Scandinavians. Nearly every individual in this procession is associated with some special admirers, as Woodsworth is called the poet of the daffodil and Bryant of the fringed gentian.

Other writers have taken a larger theme, and noted not alone flowers which beautify place and season, but that winged train, from snow-bird to oriole, and also the general panorama of our landscapes, as they change from vivid green, through gold and purple, into purest white. Elaine Goodale was led by her observations in a Berkshire country home to write

"All round the year the sun shines bright,
The pale moon sheds her softer light;
The day a brilliant beauty shows,
The night in drowsy stillness goes;
The massive links of mountain chains,
The dimpled swells of fertile plains,
The boughs of trees, the roots of flowers,
  At least are always here;
And nature keeps her sacred powers
  All round the year."

There is another procession, more practical, yet sometimes quite delightful—365 days in a year, and three meals a day. Since poets have rather overlooked this subject, my plain prose stands a better chance. Two exceptional poems occur to me. Longfellow's first verses, written while yet a lad, narrate the growth and cooking of a neighbor's mammoth turnip, till "they ate the turnip up," and Barlow's "Hasty Pudding" has outlived more ambitious pieces, so perhaps the road to fame as well as to health, lies through the stomach. While I cannot hope to instruct veteran horticulturalists and cooks, we may all enjoy recounting our mercies, and hearing what variety of food even a farmer's garden furnishes.

Let us begin with my favorite asparagus, April's best gift, esteemed a delicacy as far back as the early Greeks. Till a recent period, however, its cultivation and preparation seemed among "lost arts." Two popular modern cook-books which we own, make meager mention of this root, and I once lived in a town whose principal gardener had plowed up his asparagus because of no market for it. But the valuable diuretic properties and its early appearance, when we so hunger for something new, fresh and green, are causing increased attention and appreciation. Our asparagus, planted in a deep, rich soil, has only an annual top-dressing of fertilizer and salt. Although the latter is, by some horticulturists, thought unnecessary, we believe it checks the asparagus-worm and is a natural application, since this plant is of sea-shore origin. Our roots are eight or ten inches below the top of the ground, and therefore, send up crisp, tender, blanched shoots, quite different from those green, woody ones whose roots are near the surface. Our favorite method of serving is by cutting into inch pieces, rejecting everything which does not yield readily to a knife, then cooking in water till tender; after draining this off, and adding sufficient rich milk and butter, which is allowed to come to the boiling point, the whole mixture is poured on toasted bread. The French believe asparagus promotes longevity. Of three famous savans who enjoyed it heartly, two lived over ninety years. The other died in his eighties because, as his companions believed, he did not eat asparagus enough.

Radishes, lettuce and young onions are May's tribute. Although yellow or white onions look delicate, we think the "Red Wetherfield" is actually more sweet and tender. But a rich, mellow soil and unremitting weeding will develop the best possibilities of each sort. Raw onions now rank among the best of liver medicines, and in ancient Egypt this vegetable was worshiped as a sort of divinity. From every point of view, there is no wonder the Israelites, in barren, bilious Arabia, wept for the leeks, onions and garlic of Egypt. Those bulbs had drawn tears before, and have since. Any standard seed, like "French breakfast" or "long scarlet," in a warm, rich soil, unhilled, will give a straight, unforked radish, anti-scorbutic, blood-purifying and tonic, while lettuce furnishes a nervine having all the value of opium and none of its ill effects.

June enriches our list with cooling strawberries and nourishing pease. Shakspere's Richard III., in the midst of state-craft and slaughter turns aside one moment to say:—

"My lord of Ely, when I was last in Holborn
I saw good strawberries in your garden there,
I do beseech you send for some of them."

Horace Walpole named this lovely country seat "Strawberry Hill."

This plant is found wild and apparently a native in both hemispheres and has since received such further development, there is hardly a climate or soil to which some variety is not adapted. As for really valuable kinds, their name is legion. We have not yet learned with Scots to bake cakes of pease meal, nor like German's to compound pease sausage. though very welcome in soup from the early round pea or the later, sweeter, wrinkled varieties. Our U. S. Agricultural Department sent us a package of "Emerald Gem," resembling "Little Gem," but which we pronounce superior to that or any other kind we have tried.

We always hope to show patriotic sentiments "Fourth of July," by eating new potatoes, our own native American tubers. Long may they waive their tops in the gentle breezes, of course. Let Persia claim her beans and cucumbers, but give me "Mayflower" potatoes, or give me something better. The bean, however, has built up New England, and we all remember Daniel and his companions, excused from the king's wine and meat, were permitted a diet of pulse and water, and at the end of ten days their countenances appeared fairer and better in flesh than all the children which did eat the portion of the king's meat."

"As cool as a cucumber" was supposed to be nonsense, till an enterprising scientist introduced his thermometor into one near its center of growth, and found that point phenomenally cool. This plant has been used to assuage fevers, and if consumers can wait, as we do, till cucumpers are fully grown, just before turning yellow, no danger of cholera will ensue. That renowned traveler, Madame Ida Pfeiffer, at one time, for three days, could get nothing else to eat.

Back to the noble Roman dates the cultivation of our raspberry and blackberry. But we, ourselves, having finally learned to cover them in winter, have just discovered, at this late date, how judicious pruning and thinner setting can smooth our pathway. Now come other American products, sweet corn and tomatoes, right abreast. By planting two or three different times, the corn supply can be infinitely extended. We find it best husked and silked not long before using, that no wilting nor drying may occur. I became acquainted south with a pudding which deserves wider trial. Pass a knife lengthwise through the kernals, then grate and afterward scrape one-half dozen ears tender, full grown corn. Add two beaten eggs, a cup of sweet milk, with sugar, butter, salt and pepper to taste, and bake. Firm, scarlet tomatoes, rather than crimson ones, are good, alone or combined, raw, stewed, baked or in soups, and their calomel makes them especially valuable for bilious persons. To get the best results, plants must be set early, and box-like enclosures or old peach baskets got ready for covering them frosty nights. My weary pilgrimages up and down our long row, as

"The shades of night were falling fast,"

and again

"At break of day,"

do indeed remind me of Longfellow's youth when

> "From his lips escaped a groan,
> Excelsior!"

Usually a half dozen hives of bees, with old-fashioned care, take their own sweet will in our garden, but generally yield us honey enough and to spare. We are careful to let catnip grow undisturbed in its chosen corners, because its flowers give the finest of all flavors. Both honey and maple sugar are beneficially eaten by some who can bear no other sweets. As for melons, having been robbed many years in succession, we long ago gave up the unequal contest of raising them till now I hardly know in what month they come or any of their qualities.

Autumn has a royal gift of apples, plums, grapes and nuts. It is said a confirmed apple-eater never gets bilious, and the grape cure for consumption is well known. We have many of the De Soto plum trees, a hardy but very superior kind, found wild along the upper Mississippi. Butternuts are common in our woods. As their style of root is long and smooth, fibrous only at its end, which must, therefore, be secured, these trees are transplanted when young and with care. A half dozen in our yard, sometimes yield twelve bushels of nuts, the best tree, but ten or twelve inches thick, itself bearing three or four bushels.

Then, when our land is fast locked in ice and snow, what satisfaction to contemplate jellies and canned fruit, crisp cabbages, golden squashes and pumpkins, onions in their airy crates, and turnips buried in sand or sawdust to prevent wilting.

Parsnips and salsify will be all the sweeter, greater treat, dug in March, if taken before any new growth has commenced. Where rock maples do not flourish, a grove of soft maples may furnish, as did ours one year 200 pounds of sugar, if manipulated by a Vermonter, "to the manor born," like my father.

Whoever takes the pains to set out and cultivate a garden, can, in addition to his wholesome exercise, eat a complete course of medicine. Is not that better than a complete course of drugs? The story of intemperance is the story of overeating meat in highly seasoned forms. Flesh digests rapidly, is more stimulative than creative, hence is often taken in excessive quantity or followed by untimely thirst and hunger. Vegetables supply a great variety of elements, and digest slowly, assimilating gradually, but surely. Of fifty-two centenarians examined by Prof. Humphry of Cambridge, nearly all were "small meat eaters." "What can I do for my little boy," asked a mother, "so that he won't want to eat between meals?" "Have the meals thicker together," replied this young gourmand. Piecing between meals, candy, spices, irritants and stimulants will tempt less where food is simple and nourishing, and work be done not on one's nerve but by genuine strength.

"O lady fair, so sweet and true,
I have a secret charm for you,
To keep your lover's heart your own·
When youth is gone, and beauty flown.
Though fortune frown, and skies are drear,
And friends are changing, year by year,
One thing is always sure to please,
Just give him dishes such as these."

The labor of preparing vegetables doubtless act as a deterrent. A ten-cent brush, as many of you know by experience, greatly aids cleaning them. Whether they shall be put to cook in cold or hot water, is a mooted question between English and French cooks. So far as color and appearance go, the latter certainly have the best of the argument. My chief criticism upon cooked vegetables is that they are so often insufficently done, remaining tough and lumpy.

An Arabian legend says, Satan, claiming the whole world, demanded, one year, half their crops for rent, and chose the top half. That year they planted turnips and carrots. Satan in a rage reversed his choice, whereupon the wily Arabs planted beans, buckwheat and rye. Profit, health, and comfort still rise from the garden and help vanquish "the world, the flesh, and the devil." When to our home products are added those tropical fruits, which modern, quick transportation brings us fresh and juicy, do we not, indeed, enjoy and international banquet, and recognise a bountiful heavenly Father who provides food for ever palate and balm of every ill?

"If thro' the ceaseless round of change,
One changeless will appear,
Unmoved, undaunted may we range
All round the year."

THE VERDURE OF OTHER LANDS.

By Rev. J. T. Durward, Baraboo.

There is ever something inspiriting in "fresh fields and pastures new." It is on an humble scale the feeling of the discoverer of the conqueror. However well known the plants of foreign countries may be to others, to us they come in the manner of a discovery; and the very difficulties of an ocean voyage necessary to reach them augments their importance in our eyes; yes, makes them really appear more beautiful. I will be no recreant to my native land as to think for a moment that our grass is not as green as that of Europe, but I must say that after ten days of sea and sky, the emerald shores of old Ireland *seem* of a more lustrous green than anything ever before beheld. The almost daily rains, too, keeps it a fresher color; but no where will you find the masses of forest verdure that America can boast of.

Other flowers will be seen that are not indigenous here, as the primrose, the daisy, the fox glove, the fairy fingers of the Irish; but the most prominent difference in the hills of Great Britain over America is in the heath or heather. It clothes the hill-sides with its dark green foliage, and with the purple of its spiked flowers, forming a magnificent background for the smiling valley nearer at hand, or for the town huddled at their feet. England especially is far ahead of us in landscape gardening. Particularly did I observe this in the counties between London and Stratford on Avon; and I think that perhaps large possessions owned and controlled by one man—especially if he be a man of taste—are more favorable to good effects of landscape beauty than when, as with us, each man has his forty or eighty acres; and one clears his so bare that a sheep could not find shade, and another leaves his in primeval forest, with no unity of design forming the country into one beautiful whole.

Surely this necessary unity might be obtained at least in our roads which should be indeed *park ways* through our land, and might be such, if only the management of them was taken out of the hands of the ignorant many and placed under the supervision of educated landscape artists. But this is a digression. To return to Europe.

The shamrock is surely the most prominent of green things in Ireland. (I intend no pun!) But the Irishman is dreadfully scandalized if you dare to remark that it is only clover.

Scotland's national flower—the thistle—does not seem more at home there than it does with us, and the roses of England become more numerous after you cross the channel.

In France your eyes will be delighted by the festoons of red and white that covers the hedge-rows by the roadsides and as you proceed further east the profusion of roses reminds you of all the poets have written.

> "Know ye the land of the Myrtle and vine,
> Where the flowers ever blossom the beams ever shine,
> Where the light wings of zephyr, oppressed with perfume,
> Wax faint o'er the gardens of Gaul in her bloom?
> Where the citron and olive are fairest of fruit,
> And the voice of the nightingale never is mute?
> 'T is the clime of the east; 'tis the land of the sun."

And it is of the east, particularly of Palestine that I would speak, for everybody has seen Europe. The halfway station to the Holy Land is Egypt. Here you immediately feel that you are in another land. In Europe you felt comparatively at home; but touching Africa you are among strangers—an outlandish tongue—the headwear of the woman like an elephants trunk depending from their noses and hiding the face—the graceful flowing robes of the runners in front of the carriages—all say plainly with the Scotch song.

"This is no my ain hoose,
I ken by the biggin o't."

And the vegetation too is strange. The exogenous oak, the monarch of the forests has been dethroned by the endogenous palm, and its feathery head is lifted high on the trunk that would appear to have been built like a coral isle, not grown spontaneously.

The lotus dreamily sleeps on the bosom of the Nile, and it is particularly plentiful on the wide expanse of Lake Nunzaleh through which the Suez canal is built.

Egypt being the grainery of Europe naturally has great crops of wheat but more interesting to the stranger is the Dhurra—a kind of millet—the food of the poorer classes.

But we must hurry forward to the land of promise. But here the thought occurs to me that the striking feature of Palestine is not its verdure but its lack of verdure.

In place of the green fields and wooded bluffs that we are accustomed to, you behold white limestone hills entirely denuded of timber, and stony valleys where the cobble stones dispute the surface of the ground with the blades of wheat, or the more desolate wadies where the black goats can hardly find sustenance, and the gorges where the eagle dwells.

This desolation is most marked in Judea, Samaria and Galilee being somewhat more fertile.

The saying is that green is good for sore eyes. Any one may notice the prevalence of ophthalmia and other eye disorders in Palestine. The glare of the white roads and the fine dust that blows from them has doubtless much to do with the trouble. But there are always compensations. If Syria has not the verdure that other lands possess, it has the perpetual sunshine and the charm of color. In early summer the fields are gorgeous with flowers, with different colored flaxes, with scarlet poppies, with anemonies as large as roses, some pink and some of dazzling scarlet.

The roadsides (when there are any), are bordered by the tender blossoms of the rose of Sharon, which is however not a true rose but a cistus or rock rose.

It grows into a large straggling shrub, and there are two varieties, a white and a light red.

Our old garden friend, the scabiosa or mourning bride, has two congeners here, but the mourning is short-lived there, and the flowers, one of them is such a light purple that it cannot be called more than half mourning at best, and the other is a pretty yellow, as if the bride were arrayed for other nuptials.

Nor is more useful vegetation entirely wanting. The fig thrives on many a stony hillside, giving the welcome shade of its curiously cleft leaves, and there are large groves of olive trees and plantations of vines and hedges of prickly pear cactus. One might suppose that in an arid land like this, the plants would be dry and hard and lacking in sap. Behold another beautiful equalization of God.

As the camel, the desert ship, has a water-holding stomach, so here the plants have a wonderful juiciness. Nowhere have I seen such succulency—many of the shrubs are simply bags of water, so that it was impossible to press specimens of them, at which I much grieved, for the foliage of many plants, especially about the Dead Sea, is something marvelous in its fineness.

But if on the whole the verdure of the Holy Land can never in itself compare with the wealth of our woods, it more than compensates by the *associations* of those plants it possesses.

The traveler's work on botany must be supplemented by the Bible. Then every tree and flower will have a story to tell far beyond the mere botanical one in interest. The pale foliage of the olive trees of Gethsemane quivering in the breeze, will remind him of the agony, that according to fable, gave them their palor and their trembling.

The bright red flowers of the Adonis in that same garden, apparently dripped over the grass, cannot fail to bring to mind the sweat-drops of our Lord that became as blood.

The Ziziphus Spina Christi will have peculiar interest as it is the plant from which the crown of thorns was made. As souvenirs of the visit to Jerusalem crowns of this plant are woven by the Daughters of Zion (a sisterhood endowed by the Abbe Ratisbon, a converted Jew) and given to pilgrims.

One of these crowns may be seen at the home of Prof. Durward.

The red, swelling, lip-like buds of the pomegranate flower; the majesty of the cedar of Lebanon; the grace of the palm tree in Cades; the perfume of the mandrake, and of the spikenard; the modesty of the lilies of the valley—all will bring the Beloved of the Canticle to the pilgrim's mind.

The field of lentils—still a staple article of food—will recall Esau's misfortune, the Jonah gourd, the cowardice of Nineveh's Prophet. The wheat fields around Bethlehem will be wistfully gazed at, for here it was that the beautiful Moabitess, Ruth, gleaned her sheaves—and her husband! There are two plants that dispute the bad notoriety of being the apple of Sodom those

> "Dead sea fruits that tempt the eye
> But turn to ashes on the lips."

The only one I saw is evidently a plant or small tree, rather in size related to our potato—a volanum, and the fruit—just an overgrown potato ball.

The carab tree, a kind of locust, yields the pods that most probably are the husks that the swine did eat, which the starving prodigal son would so gladly have shared.

Nor are historical trees wanting. Among the gardens to the south-east of Jerusalem is shown the tree under which the prophet Isaiah was sawed in two by order of King Manasseh, as related by Josephus; and at Mombre stands—its long branches sustained by many a prop—like the arms of Moses in prayer on Horeb—the oak of Abraham marking the spot where he entertained the angel visitors.

I will close by saying that the most beautiful of all spots in Palestine where the verdure is most bright and fresh and most ike what our Saviour's eyes rested on is undoubtedly the Sea of Galilee, and will quote the words of the devout McCheyne:

"How pleasant to me the deep blue wave
O sea of Galilee!
For the glorious One who came to save
Has often stood by thee.

Fair are the lakes in the land I love
Where the pine and heather grow;
But thou hast lovliness above
What nature can bestow.

It is not that the wild gazelle
Comes down to drink thy tide;
But He who was pierced to save from hell
Oft' wandered by thy side.

Graceful around thee the mountains meet
Thou calm rejoicing sea!
But oh, far more, the beautiful feet
Of Jesus walked o'er thee."

Thus remembrance makes the verdure of this land outshine that of all others to our minds, and our hearts go back to the time when the Holy One called our attention to the lilies of the field and by his persence made even stormy Judea to our imagination, blossom like the rose.

Convention adjourned *sine die*.

B. S. HOXIE,
Secretary.

TRANSACTIONS OF THE 23D ANNUAL MEETING

OF THE

WISCONSIN STATE HORTICULTURAL SOCIETY.

Held in Madison, February 7, 9, 1893.

LIBRARY ROOM, TUESDAY Morning, February 7.

Convention called to order by President M. A. Thayer, and the following committees were appointed:

Nomenclature—J. C. Plumb, Chas. Hirschinger, J. S. Harris.

Revision of Fruit List—A. L. Hatch, Chas. Hirschinger, Franklin Johnson.

New Fruits—Prof. E. S. Goff, A. L. Hatch, Wm. A. Springer.

Legislation—B. S. Hoxie, E. S. Goff, M. A. Thayer.

Finance—F. C. Edwards, R. J. Coe, Wm. Toole.

Arbor Day—Prof. E S. Goff, B. S. Hoxie, Mrs. Vie H. Campbell.

Local Experimental Stations—Prof. E. S. Goff, Prof. W. A. Henry, R. J. Coe, Wm. Toole, Geo. J. Kellogg, B. S. Hoxie.

Ornamental Trees and Shrubs—W. D. Boynton, A. L. Hatch, James Currie.

Resolutions—Vie H. Campbell, A. L. Hatch, W. D. Boynton.

Secretary—Mr. President in introducing new business, I wish to say that we need some changes in the law relating to the publication of our transactions. The law specifies that the whole number of pages shall not exceed two hundred, except on the written application of the secretary to the printing commissioners. The increased work of this society requires, and the public demands more matter than can be put into two hundred pages. In two or three instances I have been compelled to cut down and leave out matter after it had been prepared. But with written request and personal efforts I have secured from fifty to seventy-five additional pages and last year an increase of one hundred. This amount with finer type than we formerly used enables us to put in the last volume nearly or quite one-third more reading matter than we have ever published.

The committee on legislation will ask for $2,000; several of the state officers have said they do not see how we get along with so small a sum, but what state officials say and what legislatures say is an entirely different thing. I think if the matter is put before them in the proper light we may get an increase; we may not get what we need, but what we can get along with.

A. L. Hatch—I move that we approve the suggestions of the secretary and that they be referred to the committee on legislation. Carried.

Secretary—I have the credentials of M. J. Wragg of Iowa who is present as a delegate; I move that he be made an annual honorary member of our society and be invited to participate in our discussions. Motion carried.

Secretary—I would like to have the members of the Wisconsin State Horticultural Society know the society is growing; it is thought more of at home and also abroad. When we receive words of commendation from such men as Prof. Ragan we should feel proud of it. Our legislature will pay some attention to our wants if we ask for them properly.

We need the law changed so that we shall be entitled to three hundred pages without this written request and also that we have more volumes bound in cloth and less in paper covers. The state prints 7,000 copies of our reports. Two thousand are bound in cloth and the remainder in paper, but one-half of these are disposed of by the superintendent of public property as the law provides. This leaves us not a large excess of bound volumes. I never like to send out a paper covered book to our sister states in exchange nor to mail one when individuals write for our reports. I think if this matter is properly brought before the legislature the law will be amended.

A. L. Hatch—I wish to introduce a resolution; this and kindred subjects we wish to consider at this meeting and for that reason I wish to introduce it now:

Resolved, That we earnestly recommend an appropriation by the legislature of $35,000 for the erection of a horticultural building as part of the equipment of the state university and that we heartily endorse such enlargement of its facilities as proposed by the board of regents as being in line with the work of our society and the needs of the people.

President—I am glad this subject is to be taken up; we are getting a good deal of help from the professors of the university. All in favor of this resolution, say aye. Carried.

A. L. Hatch—We can get help if we will co-operate and ask for it. We can make this department a manual training school for boys.

President—We can all do something in this work, and perhaps we can work as a committee of the whole to influence legislation.

Moved and carried that all resolutions be referred to the committee on resolutions.

Adjourned.

HORTICULTURAL ROOM,
TUESDAY, 2 P. M.

President Thayer in the chair.

A START IN HORTICULTURE.

By C. E. TOBEY, Sparta.

One of the many regular and universal cries that comes from the class who are always unfamiliar with the bright and winning side of any undertaking is the following: "If I had known the possibilities of success in the berry business in our state five years ago, I would have had four or five acres in full bearing before this, but it is too late now. In a few years it will be like the most of our agricultural ventures, all overdone."

It is not too late for "a start in horticulture." It is never too late for a worker in mind, as well as body, to procure his share of the good things of this earth which the study and practice of horticulture offers to one and all. It is only a few years since the only celery grown was in a small garden at Kalamazoo, Michigan, by an old country gardener and this small amount practically "went begging" for customers.

To-day over 2,500 people at Kalamazoo are realizing over a million dollars annually from the sales of celcry alone.

Five years ago there were being shipped into Monroe county, from southern and eastern Wisconsin, Illinois, and Michigan, over five hundred bushels of berries annually, valued at nearly $2,000 besides the inconsiderable amount grown within its borders.

The past season (1892) the growers at Sparta shipped over 22,000 cases of berries by express to points in Wisconsin, Minnesota, North and South Dakota, receiving ovor $30,000 as proceeds from sales, and Monroe county has a growing acreage, old and new settings, of over 150 acres.

Statisticians claim that the demand and consumption of celery has increased one thousand per cent. in the past ten years and the demand and consumption of small fruits, especially in those portions of Minnesota and the Dakotas where it is almost impossible to grow them succesfully, has increased at a per centage three fold greater than the increase of population.

Are there secrets in the growing of horticultural products? No, decidely no! Our successful growers are willing to tell, "how to grow what to grow, how to care for and how to market." Our state is doing all it has power to do to help us; a corps of the brightest and most intelligent workers in the agricultural science world are at the university of Wisconsin, ready and willing to answer all of the questions arising in our every day agricultural or horticultural pursuits.

The theory and science of growing all products of the soil, as well as the practical work of farm or garden is taught at our state university with as much care as are the modern sciences and languages and Hebrew, Greek and Latin. This combined with the excellent work being accomplished by the farm institutes, the free distribution of agricultural, horticultural and dairy experimental reports, offers us an education that has heretofore only been acquired through years of study and experiment.

Our State Horticultural society, in connection with experiment stations in three different localities in our state, is experimenting with new and untried, as well as the older varieties of berries, apples, grapes, etc., and we are all to receive the benefit of these experiments.

The question of our ability to grow berries or any other horticultural product, in any part of Wisconsin is answered and it is an undisputed fact that Wisconsin furnishes a portion of the markets of the north-west with the best apples, the finest grapes and the most delicious berries.

Making "a start in horticulture" is not a question whether you can obtain the requisite knowledge; it is not a question whether you can obtain the right kind of land in the right place and at reasonable prices, or whether you can purchase the plants, trees, vines or seeds that you know will grow and yield abundantly; all of these requisites every citizen of Wisconsin, whether he be farmer, laborer, mechanic or professional man, ought to be familiar with.

It is simply a question of, will you make this start with your eyes fully open to the possibilities of success and failure? It is not my purpose, neither is it in my power to tell you how to grow berries, because the knowledge can only be obtained by constant study, continual interest in experiments of your own and of reliable growers, and experience gained by many failures, aided by Father Time; neither is it my purpose to point to you the 200 bushel per acre blackberry, or the 350 bushel per acre strawberry-side-of-the-picture.

This "start in horticulture" ought not to be made with the expectation that you are to reap immediate profits, or that you will be able, in the first bearing year, to equal the strawberry yield of Mr. Baumbach in 1891, of 1,700 bushels from five acres, or the blackberry yield of president Thayer, 2,000 bushels from ten acres in 1892.

You must make this start with the expectation that partial failures may result with this or that variety; the spring that you made your start, might have been too dry, or the fall you made your start, might have been too wet, or too early for this or too late for that, and your resettings, which should be made as soon as possible, may also be an unfavorable season; these set-backs, with the lack of proper fertility in your soil, improper setting by incompetent help, etc., may delay portions of your fields one or two years before a perfect and complete setting is obtained.

When successful growers tell you the promising stories of phenomenal yields, question them with regard to that acre or acres that they did not tell you about, the portion that man and horse labored diligently and continually to make profitable, and at last was profitless; they have these acres, and you are liable to become acquainted with portions of these profitless acres in that "start in horticulture" you may make. At the same time, having experience with the unfavorable as well as the favorable side of the berry business, I am enthusiastically satisfied that the possibilities for the practice of horticulture in Wisconsin, even though it has the reputation of being the coldest fruit producing state in the union, are most favorable for success.

The principles of plant life and growth; the elements of air and soil required to nourish the plant to maturity, and at last the fruiting period, when the time of picking, marketing and pocketing the revenue is at hand, all form a continuous line of study, combined with work and a business life; and all this is to be obtained out doors. You who have not been cooped up in a store fifteen hours a day, or in an office ten hours a day for ten years, cannot appreciate what a meaning there is in the words, "out in the air."

A little advice to the beginner in any undertaking is always timely, and although my experience with berries is far less than most of our members, some of whom have grown gray in the service of horticulture, the tutorage under which I have been, and the position which I hold, enables me to advance a few warnings to the uninitiated, at least. Do not make the mistake of planting the one-fourth, one, two or more acres you decide to make your start with, to one variety; do not plant all strawberries, all raspberries or all blackberries, but plant in such proportion that you can commence furnishing your customers with strawberries in June, followed with currents, gooseberries, red and black raspberries, and finish an almost continuous shipping season, of three months, with blackberries. Do not make the mistake of purchasing plants that are not known to have been thoroughly tested in your own state, not alone as to quality and hardiness, but as to general profitableness. If you buy an apple tree, a grape vine, strawberry plant or blackberry root, buy it in Wisconsin, grown by a reliable Wisconsin grower on Wisconsin soil, with climatic influences similar to your own vicinity. If your Wisconsin sheep husbandry men were to buy a Shropshire, Oxford Down or any high priced thoroughbred sheep, you would not go to a section of the country to make your purchase where the thermometer never drops much, if any, below zero, if you could buy that sheep in your own state, where its parents and their fleece had been subjected to the forty degrees below zero, winters of our state.

This illustrates as well the acclimation needed in berry roots or plants where hardiness is a necessity. Common sense teaches us that Wisconsin growers must not look with favor upon every tree or plant that is proving a success only in a locality where peaches are grown successfully. Common sense should teach us that the successful growers of apples, grapes and small fruits in Wisconsin, the men who grow these products at a profit year after year, are the men to whom those who expect to be successful, in "a start in horticulture" should look for the varieties suitable to their locality, climate and surroundings.

In reading over various horticultural experiment station reports at our agricultural library at Madison the past week, I noted the fact that over eighty per cent. of blackberries tested as to hardiness and value at the stations in New York, Ohio and other eastern states, have been damaged or entirely winter killed, and this during, what we might call mild winters Among these blackberries are varieties that agents of New York and other eastern nurseries have sold to the farmers of this state, the past year, for quadruple and, in some cases, ten times the price that local growers were asking for the best blackberry grown on the face of the globe. I know this to be true also with regard to certain varieties of apples and grapes they have flooded our state with.

It is not my intention to cover, in the short time I am allotted, the many points, important as each one may be, in the culture of berries, but the pruning, pinching back, mulching, winter and spring production, cultivation, cultivation and cultivation are a few of the most essential.

I am satisfied that the market for first class Wisconsin fruit, picked, packed and marketed in first class condition is the least of the trouble of the Wisconsin horticulturist.

DISCUSSION.

A. D. Barnes—I think Mr. Tobey's paper is so clear, concise and plain that we cannot better the mater by discussing it·

T. Rich—I would like to ask if it is advisable for a beginner to put out five acres of small fruit of any one, or all varieties? My idea is that a beginner had better commence on a smaller piece of ground.

C. E. Tobey—I would not advise any one who is just commencing, to grow fruit, to put out a large field to small fruits.

T. Rich—I killed my fruit, in the beginning, by applying liquid manure.

A. L. Hatch—We often come across farmers who have just this difficulty. Mr. Tobey will tell, and others will tell, you that you cannot get the ground too rich, and I would like to have you all tell where the line of demarkation begins. In some instances you may take certain varieties, give them good soil and high cultivation, and they will succeed well while on the other hand you may take other varieties that will fail entirely. I would advise the beginner to begin two years ago, that is I would advise the young men to begin as Mr. Tobey did, work two or three years for some one else.

On the ordinary farm the capital is not the question; it is the amount of labor you can command and apply. I do not know but that you had better do as Mr. Johnson of Baraboo does, concentrate on strawberries and make them a success; if you want more fruit plant more strawberries.

C. E. Tobey—I was thinking about providing for a succession of fruits. If by starting in with a customer the fifteenth of June and furnishing him with strawberries you can provide him with raspberries then with blackberries. By suppling through the fruit season you will keep your customer right along, whereas if you only raise one kind of fruit he will buy of one and another and you will not be sure of him next season.

W. J. Bendixen—In some locations it is difficult to get help. If I had started on one thing alone I would have been out, but by having the succotash, as Mr. Hatch calls it, I had something all the time.

President—The man who has a succession of fruit through the season whether for his own family or for the general market, will make a success. I have yet to find a man who has lost his crop by making his soil too rich. If you get varieties that are not adapted to your location you will not succeed and you ought to fail.

T. Rich—One more suggestion as to why the ordinary farmer fails; he will go into a neighbor's strawberry bed and ask if he can have some of his plants? He will say, "Yes, after I get through picking you can have all the plants you wish." The result is, he gets "cheap John" plants and "cheap John" work all the way through.

F. C. Edwards—I would like to ask Mr. Hatch what he considers a failure in strawberries?

A. L. Hatch—When you do not get berries, that is a failure.

THE STRAWBERRY FROM TIME OF SETTING PLANTS TO HARVESTING.

E. J. SCOFIELD, Hanover.

Mr. President, Ladies and Gentlemen: I don't know as I can give you any new ideas in regard to the cultivation of the strawberry, but will give you an outline of the industry as carried on at our fruit farm. We have a rather heavy soil, timber land clay. We set plants in spring, and prepare our ground by first plowing thoroughly five or six inches deep, then harrow it well, run a heavy clod crusher over it, next a disc pulverizer, then the harrow and clod crusher, repeating the operation until we have the soil very fine and mellow to a good depth, four or five inches.

We plant rows three and one-half feet apart and set plants fifteen to eighteen inches 'apart, depending on the variety; rank growers like Warfield, Crescent, Beder Wood and all great runners we set two feet apart in the row. To set the plants we use a dibble about eight or nine inches long and four inches wide with shank handle Plunge this into the soil up to the handle (which you can readily do if you have your soil in proper shape), press the dibble to one side an pull it out. Take your plant in left hand, spread roots out fan-shape with thumb and three fingers, let roots down into slot made by dibble until crown of plant is on a level with top of ground. Now press soil firmly to the plant but be careful and not cover crown of plant. Right here I want to say a word in regard to the plants to be used. Never set an old plant, or a young plant that has been produced from a plantation that has born fruit. Neither do we approve of digging plants from the edges of the rows even in a new plantation, as these are most always weaklings, the last efforts of the previous fall. But get your plants from a young thrifty plantation that was set the previous spring and has never borne fruit. In digging take up the entire row, you then get the best, and no amount of after care will ever make up for a plantation set out with poor stock. Better far pay $5 per thousand for good young thrifty unmixed plants than use poor cheap stock as a gift. Good stock cannot be produced below a certain figure. The plant-grower or nurseryman must have a fair recompense for his goods or quit the business. Therefore, if you buy a bill at shoddy prices you must expect shoddy goods. We usually plant one row of staminate, or perfect bl ssom, to every two rows of pistillate, or imperfect bloosom. In digging plants we use a five tine manure fork with the tines shortened to about two-thirds their length, being careful in digging not to mutilate and tear the roots.

HOW TO PREPARE THE PLANTS FOR SETTING.

To prepare the plants for setting, as soon as a thousand or so are dug they are carried in large baskets to the packing shed, all weaklings being thrown out; the others are stripped of all old runners, dead leaves, etc.; we also cut off all green leaves except the two youngest ones; roots are all cut with sharp knife to three or three one-half inches long. Plants are now ready for the field but before sending them out we dip the roots in a pail of water and put them in a basket or pail, roots covered with damp moss. We have a boy to drop plants for each man who is doing the setting, but the boy is not allowed to drop them any faster than they are set. When we have plenty of help we divide up in three crews, one set digs plants, the next set trims and gets them ready to plant, and the last crew has the planting; in this way the work is all kept up and the setting soon done. We sometimes (when short of help) dig several thousand before we set any, but when we do this we get them all ready to set and put them in large boxes (four or five feet square and ten or twelve inches deep), packed with damp moss among the roots. Plants will keep in this way in good condition several day in a cool place When we receive plants from a distance we always cut tops and roots in the same manner and put them in the boxes of damp moss for about twenty-four hours before setting them out in the field. This freshens and revives them up in fine shape.

CULTIVATING THE PLANTS.

In about a week after setting we cultivate the plants and hoe them very shallow, but there is little ground to hoe over as we have the rows very straight, and by using a Planet, Jr., horse hoe we are able to run close to the row leaving nothing to hoe except between the plants. We cultivate shallow about once a week and after rain soon as the soil will crumble, and before any crust is formed. We keep up this cultivating until well into the fall. Hoe four or five times and allow no weeds or grass to show up, as it is a very easy matter to keep them clean by taking them in time. Cultivating often keeps the soil mellow and moist. In a dry time never let the soil bake or form a crust, that is, if you want the best results. Shortly after plants are set blossoms will show up; cut or pick these all off, don't let them set for fruit. About the time (and sometimes before) they get done throwing out, bloom runners will appear; keep these cut off (we do this with sharp hoe when hoeing), until the 20th of June, or July 1. Plants are now well established and the runners that now appear will be strong and should be trained along the row, as they will make good strong plants. Be careful not to let the plants get too thick in the row; about four inches apart and row ten to twelve inches wide suits us best.

CUTTING OUT RUNNERS.

Now cut all the runners that grow after the row is established. To do this we have for five or six years used a machine we had made for the purpose. It is very simple, made with an axle and tongue to draw by hand. There are two fourteen-inch discs, one each side the row, to do the cutting; these discs are the same as are used on the disc pulverizer. Our machine is constructed so as to run the discs on the same angle as in the pulverizer; to use it, simply set it astride the row and pull it along, it will slay the runners but pulls a little hard; this has done good good service, but we have now found something that suits us to perfection, where we can use a team of horses to do the work. This is a disc sulky cultivator made by the Janesville Machine company of Janesville, Wis., and is made for corn or any other cultivated crop. We have had one in use now for two seasons, and could not be induced to part with it. It has six 16-inch discs which not only cut the runners but cultivate the space between rows very nicely. With this machine you can cut a row to any width desired and keep it there all summer. We consider it will pay for itself every season on a few acres of strawberries.

WINTER COVERING OR MULCHING.

We use marsh hay for this, and put it on earlier than most growers. Just as soon as it commences to freeze nights hard enough to hold up a team and wagon we commence to cover; we haul on early in the morning (before ground gets thawed out) three or four loads of hay and distribute it in heaps where we want it. We are now ready to commence covering and to do this go to the nearest heap of hay, take a forkful, carry it to where we want to commence, lay it down, taking up but little on the fork at a time, and shaking it well apart so it will fall evenly over the ground and plants. Put on just enough so you can see no plants or bare ground.

UNCOVERING.

In the spring, soon as frost is nicely out, we go over one-half the field and uncover the plants, but leave the other half as long as we dare. When plants commence to turn white, or blanch under the hay, they must be uncovered. Our object in not uncovering all at the same time is to help lengthen out the picking season, and also not run the risk of getting all our berries frosted. To uncover we put two men to a row; each man has a three tine fork, and they walk along one each side of row, set their forks down in middle of row and opposite each other, and each one pulls his fork towards him at same time; this uncovers the plants, but leaves the hay laying close up to plants on each side of row. Don't disturb the hay in space between rows. We always aim to uncover after a rain if possible while hay is wet, as it wont blow back then on the plants. By having this carpet of hay all over the ground (except on plants), very few weeds will get a start, the soil is kept cool and moist and there are never any sandy or dirty berries. The hay also makes a nice clean place for the pickers to kneel on while picking. We employ women and girls over 14 years old to do the picking. Use the Hallock quart box (wine measure) and sixteen-quart crate. We put two pickers to a row—one each side, and allow no *poor berries* put in boxes. We do not sort berries or top of boxes. One man attends to eight or ten pickers; his business is to see that berries are properly picked, and picked clean, boxes filled rounding; he also carries empty stands to pickers as they call for them, and carries full stands to the packing shed. He also gives the pickers checks for each full stand as he takes it from them. Each stand holds six boxes. Pickers are not required to leave their row.

CLEANING UP.

Just as soon as we are done picking we take a two-horse mower and cut down everything on the field, let it lay a day or so, then take a spring tooth horse hay rake and rake up everything clean, marsh hay and all.

This we haul to the barn yard, stack it up and use it the next winter for bedding in horse and cow stable. After we get it all hauled off we next go to the field with a double shovel, plow and team of horses, and give the space between rows a good, thorough digging up. We dig out part of the row on both sides. Next take a good sharp tooth harrow and go over the field several times both ways. After the plants start new leaves, keep space between rows well cultivated, and in fall cover with hay same as before. Next season after picking is done plow everything under, marsh hay and plants. We set a new plantation every spring for by so doing, we have a new field bearing its first crop and one bearing its second crop every year. In regard to fertilizers, we have never used much but stable manure and not much of that. We have had some experience with commercial fertilizers with various results; take them as a whole they have not been satisfactory. We used some nitrate of soda the past season on our plant beds and had very flattering results in the way of plant growth. On our soil an occasional crop of clover plowed under seems to be all that is required to keep the soil loose and mellow. We go more on good thorough cultivation and plenty of it than on any fertilizer, as our experience has always been—

> "The more we cultivate and hoe
> The more our berries thrive and grow."

DISCUSSION.

F. C. Edwards.—What does Mr. Scofield do with his poor berries?

E. J. Scofield—We do not allow pickers to put any poor berries in the boxes.

F. C. Edwards.—I think it hurts the plants to leave them on.

S. D. Barnes.—I would like to ask Mr. Scofield if he ever knew of any one's burning the mulch on his strawberry bed?

E. J. Scofield.—Yes, I have done it myself. Marsh hay mulch after it has been run over by the pickers is difficult to burn. I have to draw on other to make it burn.

President.—Do you think you can prolong the season by leaving the mulch on?

E. J. Scofield.—Yes, I think I can.

President.—You do not cultivate at all in the spring do you?

E. J. Scofield.—I think if a man has done his business as he ought the year before there is no need of cultivating in the spring.

Will Hanchett.—I would like to ask Mr. Scofield if he does not think that to cultivate in such a season as last spring would be a positive damage?

E. J. Scofield.—Yes I would. I would think so any spring.

Will Hanchett.—I think there are more plants lost in leaving too many leaves on the plant when setting.

President.—I understand that Mr. Paumbach, who reached the large yield recommends removing the mulch, thoroughly cultivating, and then returning the mulch. I would like to hear from Mr. Johnson, who is a successful grower, as to his method.

Franklin Johnson.—I have never practiced cultivating in the spring, but I would if I had the kind of a soil Mr. Baumbach has; If I had a stiff clay soil that would bake and crack I would cultivate to keep the soil moist. My experience in setting is that plants do better if after digging they are trimmed and kept in a dark, dry place in moist earth for a day, they will not wilt and grow better than if they are set as soon as dug.

A. L. Hatch.—In your opinion would it be well to remove the leaves and get immunity from rust?

Franklin Johnson—I have not had experience with rust. If I had the Manchester I would discard it because it is liable to rust. I had an idea once if I got a nice, bushy plant that stood up high that it was just the thing, but since I have had an iron tooth cultivator I have let it run as soon as possible.

A. L. Hatch.—I want to know if that cultivator is the best you know of?

Franklin Johnson.—It is. In regard to pickers, it is no trouble for me to get them. I turn off three times as many as I can use. Some of my neighbors grow raspberries, and as their land is better adapted to them than mine, I let them grow raspberries while I grow the strawberries.

President —What did you get for your berries?

A. Ten cents; a very few went as low as eight cents per quart. I never have succeeded as well with patrons as with commission men.

E. J. Scofield.—I would like to ask Mr. Johnson if he thinks a plant is capable of reproducing itself before it gets fairly established?

My experience is that I want strawberries, raspberries and blackberries. I have had as high as $600 an acre from the Gregg.

W. J. Bendixen.—I do not believe it is the best way to keep the plants before setting, as Mr. Johnson does; it may do for him but not for me; I do not like it. About the best tool for setting, I have what I consider an improvement. I use an old ax. You use a dibble and it makes a hole in the ground below the roots, and that is not so good for the plant. I tried a number of different tools, but I like the ax best. Why does Mr. Scofield recommend early mulching in the fall?

E. J. Scofield.—I think the ax would be a good thing. With regard to mulching early, it is the freezing and thawing that does the damage; if we cover up early it freezes and stays frozen, therefore I like it better.

Franklin Johnson—I would not leave the runners on the plants. I let the first runners form, I consider by trimming off the runners that the plant is stronger. The quicker we can get the plants to cover the ground the better; then trim off the runners.

A. L. Hatch.—Do you not consider after your plants have filled the bed that the runners that come out in the open ground, that the cultivator cuts off, are as good as any?

Mr Maxon—I would like to ask Mr. Johnson if his plants are bearing fruit, would he allow them to produce runners?

Franklin Johnson—They will not do it, or if they do there is something the matter with your bed, and they should be cut off. The first year I aim to get plants and plants only.

Mr. Maxon—When I find certain plants producing runners I take them out of the bed altogether.

Prof. Goff—I want to ask Mr. Scofield how the profits of the second year compare with the first year?

E J. Scofield—I calculate it is two-thirds as good.

Prof. Goff—How does the cost of getting the second year's crop ready compare with that of the first year?

E. J. Scofield—About one-fourth as much, it is not so much work to get it ready. This year I am leaving over two acres that has been in two years, next season will be the third; it was in good condition.

President—Prof. Goff, what is your experience with regard to keeping plants in the cellar before setting?

Prof. Goff—I have had no experience with strawberry plants, but some years ago with tobacco plants, we found it was a benefit because it gave the roots a chance to heal over their wounds.

Carl H. Potter.—Does Mr. Schofield give his plantation any hand cultivation the second year?

A. None, except to pull out the weeds by hand.

Carl H. Potter.—I have heard no suggestions about setting strawberry plants with a spade. I know of a man who has practiced it and sets much faster than any other way.

President.—We set fifteen acres last spring that way.

John Menn.—With regard to mulching after the first frost in the fall, I waited for the first frost and the snow came first and my plants are not mulched yet. Now, is there any danger if they were mulched of their smothering under the snow? We got deep snow in the fall just before Thanksgiving and before the frost came. Can I mulch in the spring?

A. M. Ten Eycke,—Which plants bear the most, early or late runners?

President.—The first runners will give the most fruit but the objection is if you leave the first runners, during the season you will get so many that it is better to cut off the first ones.

Franklin Johnson.—I think the more we trim in the fall the better plants we get. If I could not get the ruuners into the row in any other way I would drive on the bed with a steel-toothed horse rake, then you would get them out so you could cut them off.

B. F. Adams.—With regard to mulching, I have practiced it over thirty years and in that time we have had some very deep snows and I have never experienced any bad results; they will come out in the spring in better condition, and if they were not mulched in the fall it had better be put on in the spring. We do not need very heavy mulching on strawberries.

W. J. Bendixen.—I brought up this question of mulching because I got caught as Mr. Menn did. I mulched with horse manure.

Discussion closed.

NOTES FROM OUR NURSERY.

R. J. COE, Ft. Atkinson.

Mr. President and Members of the Wisconsin State Horticultural Society:—A few days ago I received the program for this meeting and took a little time to look it over and see who should make their names immortal by reading a paper before this society this the world's fair year. Imagine my surprise when I found myself down for a paper on "notes from our nursery."

The same mail brought a letter from friend Hoxie saying that he had assigned me that topic without my knowledge or consent but that he expected me to respond and intimated that I might touch upon as many points as I saw fit. If this paper doesn't sound like a fairy story please remember that it is all made up of notes or bits of experience where sometimes a few words will tell what it has taken as many years to find out to our own satisfaction. It may be a good deal as the boy said about the dictionary. He borrowed one of a neighbor and when he returned it he made the remark that he had read it most through and when asked how he liked it said, "it was all right enough but it seemed to him that it changed the subject pretty often.

The season of 1892 was a very peculiar one and to the fruit grower an unsatisfactory one. So far as my observation goes strawberries on new beds were a very light crop; in some cases almost a failure, while old beds produced a very fair crop. (Query: why should old beds do so much better than new ones? I hope we may find out all about it in the discussion.) The season was also, in some respects at least, the hardest to work the land and keep it in good condition that I remember of. During the months of April, May, and June it rained nearly every day keeping the ground so thoroughly soaked that it was almost impossible to find a time that it would work well. (My notes say that in the three months named it rained, sometime during the twenty-four hours, seventy-seven days out of the ninety-one. This was followed by a very dry and rather windy July and August which baked the ground and made it very hard. Up to July plants of all kinds had made a good growth but when the drouth came vegetation of all kinds suffered much more than in any of the previous years when it was dry all summer.

Up to the middle of July we thought our new strawberry beds were the best we had ever had, but for the next month not a plant would take root. The ground was so dry and hot that the young roots would burn off before they could get good hold of the soil. The cultivator had been kept going and the soil between the rows was very fine and mellow. We tried the experiment of hoeing about half an inch of that fine dirt right onto the plants and it proved a success, for every plant rooted in good shape. In order to get any notes on strawberries I shall have to do like Sam Slick's girl. Perhaps you will remember what he said about a certain young lady that had been about twenty-two years old for some time. He said, "if she ever lived to see thirty she would have to do like a crab, go backwards a few years." As we had no new beds to pick last year, I am obliged to go back a year for what I wish to say about the strawberries, and about the first thing I have to say about it is that I think there are too many varieties for either pleasure or profit.

Every year sees a long list of new varieties that are claimed to fill a long felt want, or to be the coming berry or that will supercede all other varieties, or I don't know what. These are usually sold at high prices, and the price is about the only good thing there is about them for nine out of every ten are no better than kinds we have had for years. Please do not understand me as saying we have not made any progress, for we have, and good progress, too, but the fact still remains that there are too many that never pay for the room and care given them. Try all kinds and hold fast to that which is good is sound advice, but when you find one that is unprofitable or undesirable, to drop it is just as sensible. We find, of the varieties that we have thoroughly tested, that Warfield, Bubach, Park Beauty and Haverland gave us the best crops and the most money. Eureka is also a good money berry on account of it being so late, as late berries always bring a good price. You will notice, perhaps, that all of the above are pistilaes and will say at once that they will not fruit alone. Well, that's so, and more's the pity.

What we are looking for is the variety with a perfect blossom that is as good a grower, that is as reliable every way and that will bear as many quarts of good berries per acre as the ones named above. I have noticed that most of the varieties that we grow have some little trait or peculiarity of their own that it pays to watch and humor them if we can. For instance the Bubach will stand more drouth on our grounds than any other variety, while on the other hand the Warfield suffers more from the same cause than most varieties, but it (the Warfield) will stand more wet in the blossoming time, and still produce a good crop, than any variety I know.

While some sorts will stand a good deal of cold and even go through quite a frost without much injury, others are so tender in bud and blossom as to render them of very little value in sections or locations subject late spring frosts. The Sharpless is a good illustration of this. Now it is of very little use for us to observe these things unless we take a hint from our observations and try to get a little benefit from them. Therefore in planting I should try and take advantage of the lay of the land and plant such varities as stand drouth and that are tender in blossom on the higher ground and the ones that are hardy and that do not object to water on the lower land. Experience says never plant strawberries after strawberries, unless you are anxious to grow half a crop where you ought to get a full one. Small fruit of all kinds ripened later in 1892 than I ever knew it to do before. In 1890 we picked the first strawberries for market June 2nd, while in 1892 it was the 23rd before we could sell any. This is a difference of just three weeks. Our experience is that red raspberries planted in the fall will make a better growth than if planted in spring while the cap varieties although they will live through the winter and grow all right, will make a much stronger growth if planted in the spring. Query, Why? Well I don't know unless it is because the canes from the old root help the new plants to make a vigorous start early. The following notes were made in the field during raspberry picking, as a sort of guide for our future planting. Tyler, early but a weak grower and light yielder, better drop it. Souhegan is just as early and much stronger and better every way. Spry's Early is a heavier yielder than either but runs small at the end of the season. Gregg is very large and picks its whole crop in a few days. If it was only a little hardier would be a grand berry. If I could have but one black cap it would be either Ohio or Older. They are both strong growers, hardy and very productive. The Older the most so of any black cap we have, and I should unhesitatingly put it at the head but for the fact that last season it was not quite as firm as I should like. I have never heard any such reports of it from any source and am unable to account for it.

Up to the limit of your market the Shaffer is the most profitable of any variety either black or red, but it is too soft for shipping, and even for home market should be picked every day. Of the sucker varieties Cuthbert is of the best quality but is not very hardy. I think the Brandywine has been our most profitable red because of its good shipping and selling qualities. It is firm enough to ship almost any distance and its bright color makes it a good seller, while the Golden Queen is fine flavored and beautiful on the table, especially if mixed with some of the bright reds, I very much doubt if it will ever be a profitable market berry. It is dull and unattractive looking in the box.

I am neither a prophet nor the son of a prophet, but if I can read the signs of the times aright, the time is soon coming when red raspberries will be much more profitable to the market grower than the black ones. A few years ago the reds sold for nearly double the price of the blacks.

Then everybody planted reds and neglected blacks, until one quart of the blacks would sell for more than two of the reds, and of course nearly everyone plowed up their reds, until now there are only two or three growers in our section that have any of them. If I mistake not the next season will see them equal to if not higher in price than the black caps.

We have planted our currants and gooseberries five feet apart each way, so that we can cultivate both ways, and in that way do nearly all of the work with a horse. Of the varieties, we like Red Dutch for early, but for the main crop, the Prince Albert suits us the best of anything we have planted. It is a very heavy cane and is able to carry the heavy crop it always produces. It also ripens late and will hang on the bushes a long time after ripening and keep in good condition. The stems are very long and the berries are large of a pink or very light red color. Among the gooseberries if there is a better one than Downing, we have failed to find it. We have great hopes of Red Jacket, however.

We have always supposed that currant cuttings planted in the fall were more certain to grow and would make a better growth than planted in the spring, but our last season's experience does not bear out that conclusion, for the one's that we planted in the spring were much finer in every way.

The grape crop was later in ripening last year than I ever knew, and still so far as I know, they all ripened before freezing. What I said about the number of varieties holds good in grapes as well as strawberries.

I have been asked a good many times what we use for labels to mark the different kinds of plants so that the mark can always be read and that will never rub out nor get dim with age. We use stakes on which are nailed small strips of common sheet zinc. They should be prepared some little time in advance and either dampened a little or left out of doors so that the zinc will corrode somewhat. You can then write on it with a common lead pencil and the longer it is used the darker and brighter it gets.

If it is true that the fruit crop of 1892 was unsatisfactory, it is equally true that there never was a time when flowers of all kinds were more abundant or more perfect. The roses were particularly fine. It seemed as if every branch produced an army of buds and every bud filled out and made a perfect flower. The flowering shrubs were also unusually productive of bloom, being covered with flowers during their season. I do not remember to have ever seen Dahlias and that class of flowers so perfect in form and color nor so full of bloom as the past season.

Thus you see that although we meet with disappointment and even discouragement in some lines, and some things do not turn out as we would like, still we find that on the whole we are abundantly blessed and have great cause to be thankful and satisfied with our lot as horticulturalists.

SOIL AND EXPOSURE AS IMPORTANT FACTORS IN SMALL FRUIT CULTURE.

F. C. EDWARDS, Ft. Atkinson.

The task of discussing this rather complicated question perhaps ought to have rested upon these older heads, for their hands have been holding the plow handles for many years. But still there seems to be in it unsettled questions. Men giving different testimony of results on the same variety of soil in different localities the same year, and therefore the theme is fertile. I hope if I diverge somewhat from the ideas already entertained you can say such ideas are excusable in youth.

Soil as an important factor in small fruit culture is our first question under discussion. My friends, I am of the opinion there is more stress to be put upon the importance of having and using as freely as possible a compost heap of natural manures than any other item ten to one in making a success in small fruit business. Soil in its natural state is far below its possibilities, but by using clover and natural fertilizers it can be made to respond with astonishing productiveness. The old motto is "Grow two spears of grass where now one grows."

My pet idea is fully in accordance with the action of J. M. Smith, of Green Bay, in plowing in all the manure you can every season. I think it is just as profitable to till one acre in the very highest state of cultivation as it is to till five in the ordinary way The possibilities of the soil are just as unlimited as the possibilities of a person. A person untrained in any of the departments of life has nothing valuable at command. He may covet the position but is not qualified to execute the office. So the soil in its wild or natural state is not equipped to do you very valuable service, but enrich it with all plant sustaining elements in heavy quantity in equal parts and it is ready for any call you may make upon it Can you see any analogy between a person who has reached the most improved state of human nature and the yield of five ordinary crops grown in one year on one piece of soil?

Successful work can be done in small fruit (except grapes) in any locality of tillable soil where water does not stand less than four to six feet below the surface. I wish to bring as proof to this statement the situation of the fruit growers of Dousman. Most of them being able on their fruit beds to reach water by digging about the length of a spade to 6 ft. Some portions of their field are more elevated. But the lower sections yield as abundantly as any and perhaps more so. But grapes must be put on soil well under-drained. Dousman is one of the heaviest shipping strawberry points in this state. It has a sandy soil and many natural advantages.

In regard to raspberries. Reds can be planted perhaps on moister soil than black varieties; but any small fruit will not do well on muddy soil. No soil but of a sandy composition or make up on as low a level as four to six feet to water line can be used for small fruit. Currants and gooseberries will do on as low soil as black raspberries and blackberries. Blackberries, for the past two seasons need to be nearer the water line, or a partial failure in crop in this locality is sure to take place. No amount of mulching of any sort will carry the whole crop through the season and ripen them in perfection.

I wish now to briefly discuss the different kinds of soil. I might say sandy soil or loam if in a high state of cultivation is the easiest to till and the surest and heaviest cropper.

In California.—Their best fruit and most of it is on what once was a sea bed, sand, pebbles and shells are all the eye can detect; but responding abundantly where the trees or vines are planted and attain a fruiting age. Clay soil ranks next to the one just mentioned in productiveness but hard to till unless in the very highest state of cultivation. During excessive rains or drouth it is impossible to handle this soil. But in case of drouth by early and proper handling this trouble can be bridged over by cultivation and mulching. Prairie soil in some seasons will surpass all others in yield; but is more apt to grow bushes than fruit. I wish to quote J. C. Plumb of Milton here, perhaps not verbatim, but in substance, given at a farmers' institute at Milton Junction. Comparing Ft. Atkinson soil with theirs he said: "While our soil grows *large* bushes and some fruit, *theirs* grows smaller bushes *but fruit from top to bottom.*"

Chemical Fertilizers might come up here and be briefly discussed. Were the party who is using these goods thoroughly posted as to the needs of his soil or in what proportion of plant sustaining elements the soil is deficient all right and well, but there is not one in 1,000 who is, and hence the failure generally to get pay for the investment. Perhaps your soil is full of potash and you heap on more. It is like a doctor who does not understand the nature of the disease. Doctoring at random perhaps he aggravates perhaps he cures the diseaee. I understand the compost heap of natural manures contains all the elements to sustain the soil in plant growth, the same as milk has all the element to form bone muscle, etc., for growing animal life.

The soil of a well regulated fruit farm should be treated on the same basis as a stock and grain farm by rotation in crops, often changing raspberries to strawberries, etc. Not letting the fields stand too long, using a part of the farm in clover. By this means keeping a high standard of fertility in the soil. We now discuss

Exposure as an important factor in small fruit culture.—As I view the matter it does not make a particle of difference whether the soil slopes to the north, east, south or west as to the quantity or perhaps quality of small fruit you can raise on a certain piece of land. But I am open to conviction on any subject upon proper proof being given, that my conclusions are wrong. In my experience it is all nonsense to claim a certain slope is your success. When you think you have reached perfection, a new-comer's plantation with a different exposure will figure better returns than you can or ever have received.

It is certain that grapes are earlier in ripening on an eastern or southern exposure than level soil or slopes in other direction. But I question any heavier yield on other exposures. I have a vineyard in mind, that had this season, the nicest grapes I ever saw in Wisconsin and a good crop, the exposure being to the north and a part of the field was level.

J. N. Stone is credited with saying, "He sometimes thought his northern exposure or sloping of soil of the place (now owned by J. M. Edwards & Son at Ft. Atkinson) was the reason he was so free from blight and other things small fruit is heir to."

In regard to exposure I am in a measure an unbeliever in its deserving or claiming much of our attention in the small fruit business. Our natural surroundings are such as to teach us, where small fruit of all sorts grows in a wild state almost everywhere, on the hillsides and in the valleys. Where nature speaks in this manner aided by the fine improved varieties and cultivation we have no limit to our success in this department of life. In my judgment not the exposure but what state of fertility your soil is in and how managed, is your success. In the soil my faith is unbounded and the strength and beauty of its resources the labor of opening up a new country has given us as yet little time to test, but when land becomes more valuable these items will gain our utmost attention and in no department of life will items of industry be figured closer than in the small fruit business and the soil and perhaps the exposure that produces the finest results.

DISCUSSION.

Geo. J. Kellogg.—Will Mr. Coe mention ten best varieties of strawberries? He mentioned five.

R. J. Coe —I do not think we have ten. I think that is the trouble: we try to grow too many varieties. Beder Wood is a good grower; Jessie is a fine grower, but it is unreliable, it is liable to frost; Michel is a splendid grower, I wouldn't like to condemn it although all the new beds I know of in our section were a very light crop.

Q.—Why would Mr. Coe prefer spring cuttings of currants and gooseberries to fall.

R. J. Coe.—I do not know why, but I have always supposed that spring cuttings did the best.

Prof. Goff.—From my reading (I cannot speak much from my experience) I have been taught they are in a better condition for planting if cut in the fall, stored in an outside cellar where they are just kept above the freezing point and planted in the spring. The stems will become calloused and a larger per cent. of them will grow than if cut and planted out in the spring.

M. J. Wragg.—We have always practiced fall planting; we cut just as early as the wood is matured; last year it was in September. We callous them as soon as we can, plant them right out and get a good growth of root in the fall. In the spring we get only a few sickly plants.

A. L. Hatch.—The point of your success lays in early cutting and planting, does it not.

A.—Yes.

R. J. Coe.—One year ago last fall the ground was so hard and dry we could not fit the ground to put the cuttings in. We had to keep them over and we did not expect to have many of them grow, but most every one grew.

M. J. Wragg.—We are just getting our grape wood in now, great boxes of them. We have good pieces of ground covered with manure to keep the frost out. We put them out and in the spring rake the manure of and put on hot bed sash.

Prof. Goff.—Mr. Wragg, have you ever practiced putting out currants without callousing?

M. J. Wragg.—No; we get a better system of roots with fall callousing. We cut all our ornamental shrubs and callous in the fall, putting them in the ground just before it freezes up, put them out in November.

Wm. Spring.—I would like to ask the growers if, when they came to lay down their black raspberries last fall, the found them full of insects?

President.—Mr. Spring, did you find them in yours?

Wm. Spring.—Yes; I found them so full that I did not do anything with them. It seemed to be a kind of a maggot just on the top of the ground.

Prof. Goff.—I think it is the spring tree crickett. I do not know of any spraying mixture that will prevent it. The insect punctures longitudinally and lays its eggs. I do not know of anything that will destroy them.

Q.—What is a remedy for sun scald?

Prof. Goff.—Good tree protectors.

Q.—For fire blight?

Prof. Goff.—Do not know.

Q.—Curculio?

Prof. Goff.—The only remedy is the German process. It consists of a large frame covered with a sheet spread around the tree to catch the curculio, then jar the tree. It must be commenced as soon as the petals fall and continued as long as you can catch any.

F. C. Edwards.—With regard to strawberries, I see no reason why we should take off any runners at all. I think we had better let the first runners set and make bearing plants for us.

President.—If you set Wilson, Sandoral or Parker Earl, some of those slow growing plants, you will not need to thin them out.

George J. Kellogg.—Would you recommend the Michel?

President.—Yes; as a pollenizer and a thrifty grower, it is a very thrifty grower.

Q.—How would you prepare new or virgin sandy soil for strawberries?

J. F. Case.—I have seen furrows turned right up on sandy soil and have seen good crops of berries raised on land prepared in that way.

Mr. Taylor.—It has been my experience that a crop on a soil with an exposure to the south ripens up a crop of berries earlier than if grown on a northern slope. With some crops it is a question of maturity that means profit or loss. I think in nearly all cases a southern slope hastens the maturity of the fruit.

F. C. Edwards.—Do they not start earlier in the spring and wouldn't they be more apt to be hurt by the frosts? A grower expects to put his fruit on the market every day.

J. F. Case.—I had a piece of ground planted to berries on a southern slope and another piece with a western slope; on the southern slope I had berries the 25th of May. If you want early berries grow them on a southern slope, if not, on a northern or western slope.

Geo. J. Kellogg.—The Sharpless is not worth planting unless you are free from a frosty exposure, and so with the Jessie.

A. M. Ten Eyck.—Would it do to take green cuttings of gooseberries and currants in the spring?

M. J. Wragg.—Yes; but I do not see any advantage. We do it but it is because we have a scarcity of matured wood in the fall..

Carl H. Potter.—In your system of cutting off the first runners, Mr. Thayer, do you cultivate both ways?

President.—Yes, we do.

Franklin Johnson.—I would like to ask Mr. Thayer how he marks his ground for setting?

President.—I mark with a marker, three and one half by two and one-half feet.

Franklin Johnson.—I set the day it is plowed. I make the rows four feet apart and set from fourteen to eighteen inches apart in the rows. I find the Crescent and Warfield most successful. I try most everything for a pollenizer.

Wm. Spring.—What strawberry can we use that is most like Crescent and Warfield?

Will Hanchett.—Van Deman.

C. E. Tobey.—Would Mr. Hanchett advise farmers to use Van Deman to fertilize with when plants are worth a dollar a dozen?

Will Hanchett.—No, not until they are cheaper.

A. M. Ten Eyck.—Does it make any difference about the kind of pollenizer we use?

Geo. J. Kellog—We need an early staminate for an early pistilate. By the time our volume is out the Van Deman will be down at a fair price.

Q.—What would you advise the farmer to use?

Will Hanchett—I would name the Warfield for a pistilate and the Capt. Jack for a staminate. I think the Van Deman is the one the farmer has been waiting for, the one plant to grow. The only objection we would have against the Jessie is it frosts early and it is not always perfect in development.

Geo. J. Kellogg—I would recommend four for the average farmers, if the average farmers would take care of them, two staminates and two pistilates; two early and two late varieties.

A. L. Hatch—There is an important point that I wish to speak of and that is the fungus, that is attacking the raspberry, known as the blight. You remember Mr. Harris said at our meeting last summer, "if we could not find some remedy we would soon have to give up growing raspberries." I visited Mr. Smith, you know he has sandy soil and cultivates highly; he was free from blight. This fungus lives in the roots of the plant. While we are hopelessly groping around for something that shall be a guide for us I have been looking over my plantation where I have had good cultivation, but I have the blight. If there is any grower here that has protection from this blight by high fertility, high cultivation, we want the facts brought out. I would ask Mr. Edwards to tell us about his plantation, if the blight exists on his grounds?

F. C. Edwards.—I have never known a failure on my father's place; he mulches the black raspberries very heavily in the rows, the red ones he does not mulch so heavily, he has had good returns this year, although it was rather a light yield.

J. F. Case.—My raspberry leaves roll up and after they roll up the cane withers and the fruit withers also, the next year the hills die out; these are in places where I fertilized very heavily; my berries are the Marlborough and Early Queen.

F. C. Edwards.—I know of a man at Oconomowoc whose crop was a failure, but we never have had a failure.

R. J. Coe.—We have been troubled a little with the blight; little spots on the leaves, not enough to ruin or injure the crop, just a little on the leaves.

Will Hanchett.—We had quite a little trouble last year with the blight. I do not think cultivation has much to do with it.

C. E. Tobey.—We have been troubled with the folding, or drooping, that Mr. Case spoke of. We dig them up and destroy them.

J. J. Menn.—I had five rows of red raspberries. I laid them down and covered them. In the spring I removed the manure from three rows and cultivated up close to the hill, the other two that I did not remove the manure from was much the best crop.

Mr. Kanouse.—Five years ago I took one fourth acre and put out raspberries. I put on about a foot of saw dust, they stood the drouth through the season and never lost a berry. I used oak saw dust.

Adjourned.

TUESDAY EVENING, 7:30.

REPORT OF SECRETARY.

COLUMBIAN EXPOSITION.

To open this matter, as I hardly know where to begin, I think it will be be best for me to read the report as I made it to the governor. In response to the circulars sent out, apples were sent forward and are now in cold storage. We considered this to be the best and cheapest method of collecting for the exhibit, much better than to send a man around through the state to collect. Mr. Samuels very highly commended our method.

A year ago you made choice of Mr. Thayer to meet with the state board; he could not always meet with them. Just before our summer meeting at Baraboo I visited with the board, and also with Mr. Samuels two weeks ago; we wanted to know about our space. I found Mr. Samuels about as hampered as he could be. Although a schedule had been made out it had been completely set aside. I expected the new rules would be here for this meeting. It has been universally expected that premiums would be received, but it has been decided that no premiums will be paid.

We are to have a wall space seventy-five feet long by four feet wide. I think we have the finest location there is in that whole space. There are five shelves in succession three or four inches apart. We are allowed to use the whole wall space, twenty feet high, if necessary, and we could not have that height if we occupied a center space. The first shelf is twelve inches wide, the rest are eight inches. Wire net work is put on the edge of shelves and tables to protect the fruit.

Mr. Samuels expected the Columbian Exposition managers would furnish the tables, but if they did not do so he could make arrangements with a contractor to make them cheaper than the states could do it themselves.

Later in the season we can have more space if we need it. Our trees are on Midway Plaisance at the extreme end. Mr. Thayer has strawberry plants out adjoining these.

As regards the fruit coming in and how it will be brought in, it seems to me the most feasible plan is to proceed somewhat as we did with regard to getting our apples; we may have to pay a little more than it is worth on the markets. If it does not come up to the standard we can sell it for what we can get for it. It seems to me that is about the best way for us to exhibit fruit there. We are only about twelve hours away from Chicago to any part of the state, and no state, except Illinois, has better facilities for making a display than we have.

It had been suggested that it might be advantageous to have glass covers to put over our apples to protect them from the atmosphere and the dust.

I immediately opened correspondence with glass manufacturers with regard to them. I wrote to know how much they would cost us. One firm would make them for us and engrave them with the word Wisconsin or Wisconsin Horticultural Society, and one hundred covers would cost us about $35. If we cannot afford one hundred we can have fifty.

I find Mr. Samuels, chief of horticultural department, a very genial man, and I think well qualified to fill the position he occupies.

Our whole expenditure thus far has cost us about $600, but more than one-half of this has been expended in the botanical collection by Mr. Dunlap, of Milwaukee, which as I have before expressed my disapproval of and now report that it has been completed up to a certain date and is ready for exhibition at the exposition next May.

REPORT OF COMMITTEE ON FRUIT EXHIBIT AT WORLD'S FAIR.

To the President and Members of the Wisconsin State Horticultural Society:

Your committee to whom was referred the matter of collecting apples for a spring exhibit at the coming World's Fair, respectfully offer the following report:

A preliminary meeting was held in Milwaukee on September 14th, at the time of the state fair, at which it was arranged that at the proper time two members of the committee, namely, the chairman and Mr. Phillips, should visit the principal apple growing regions of the state for the purpose of collecting samples to be forwarded to Chicago and placed in cold storage for safe keeping until the opening of the exposition, next May. As the time for commencing this work approached, however, it appeared impossible for either of the appointed members of the committee to undertake the proposed tour of collection, Mr. Phillips being detained by private business and the chairman by business connected with the experiment station. A second meeting of the committee was therefore called to meet at Chicago, on September 28th, at the meeting of the American Horticultural Society. The meeting was appointed at this time and place in order that your committee might have the benefit of conferring with similar committees from other state societies in regard to ways and means for securing the best spring exhibit of fruits. At this meeting only the chairman of your committee was present. After consultation with Chief Samuels of the department of horticulture and committees from some other states, it seemed advisable that your committee should proceed at once to make as fine a collection of Wisconsin apples as possible. Arrangements were therefore made with the Union Cold Storage Company, 16th and State St., Chicago, to receive the fruits when they should be collected and consigned to them. When the chairman of the committee proceeded at once to Evansville for consultation with your honorable secretary. It was already getting late to collect fruits from the orchards and no member of the committee was able to undertake a tour of collection. After due consultation between your secretary and the chairman of your committee it seemed best to issue circulars to the apple growers of the state requesting them to make collections of the finest specimens of apples and ship the same to Evansville in accordance with certain specified rules and to offer for these collections a small amount as premiums. It was believed that the expenditure of a certain amount as premiums would secure a a better collection of fruit than a like amount used to defray the traveling expenses of a collector. Mr. Springer, of Waupaca county, was employed by your committee to assist in gathering the numerous seedling apples of that region. A copy of the circular sent, and of the premiums subsequently awarded accompanies this report as exhibits A and B.

It gives me pleasure to state that the responses to this circular from nearly all the apple sections of the state more than equaled our expectations. A quantity of samples, amounting in the aggregate to about fiteen barrels was promptly forwarded to Evansville. Of these, eleven barrels of the finest were packed by a committee consisting of Messers. Hoxie, Hatch, Plumb and Goff on October 20th and 21st, and immediately forwarded to the Union Cold Storage Company.

For reasons that it is not my office to state, the apple growers residing in the neighborhood of Baraboo failed to respond to our circular either through the express office or post office. Some days after the shipment of the first lot, your chairman visited Baraboo and succeeded in gathering about two barrels of fine apples from that neighborhood. Unfortunately, it was too late at this time to secure the finest samples and it is feared that Baraboo will not be able to do full justice to herself at our spring exhibit.

The committee feels that it owes thanks to many members of our society and some others for their hearty co operation in our efforts in securing apples for our spring exhibit. The spirit manifested in the majority of cases was one of patriotic interest in the work. The proffered pay for the fruit was declined in several instances and in others considerable trouble was voluntarily taken to aid in the procuring of samples.

HOW THE APPLES WERE PACKED.

The apples were assorted carefully, each apple chosen wrapped in paper, and five samples of a kind placed in a paper sack to which was attached a tag showing the name of the variety inclosed, and the name of the grower so far as known at the time of packing. These were classified and packed in numbered barrels as far as the assortment would allow, and a complete record kept of the contents of each barrel, which list we have marked as exhibit "C" to accompany this report. By means of this list, any person can take from the cold storage any collection he may desire without disturbing the other fruit.

SUGGESTIONS FOR FUTURE WORK.

Packages, packing, labeling and shipment of fruits.—For shipment and display of small fruits, including strawberries, raspberries, blackberries, cherries, plums, dewberries, huckleberries, blueberries, currants and gooseberries we recommanded the use of the sectional berry cases, each section of which holds eight pint boxes. These pint boxes should be filled with fruit selected and placed by the grower, one kind in each box, just as it is to be displayed. Each box should be carefully labeled upon the plan shown in sample case which is here on exhibition. Not more than four sections should be joined in one package for shipment.

For apples and pears, plain boxes holding not more than one bushel should be used and each box should have cleats or hand holds on the ends. Each fruit should be wrapped in paper and not more than five specimens of a kind should be placed in a paper sack which should be folded closely without tying, and plainly marked on the outside with the name of the variety and of the grower. These sacks should be closely packed in the boxes and all interstices filled with excelsior or paper to prevent all shaking in transit. For display, the apples and pears will of course be removed from the boxes and placed upon plates. In case the society is required to furnish tables and plates, we recommend that the tables be covered with bleached muslin and that white crockery plates of two or three sizes be provided. Grapes can be sent and displayed in California grape boxes of three and five pound sizes. The small ones for small berried kinds, like the Delaware, and the larger for such as Worden and Concord. For shipment these should be crated together. A label should be sent in each basket showing the variety and the name of the exhibitor, as shown by the sample basket here on exhibition.

Quantities.—Not more than two pints of one kind of fruit sent in pint boxes should be forwarded at one time by one person and not oftener than once in two days Not more than twenty five apples and pears of one kind nor more than five pounds of grapes of a single variety should be sent in one week by one grower. In all cases the superintendent shall have power to increase or diminish these quantities when the needs of the exhibit may require it. All fruit must be clean, dry and free from bruises or insect injuries, and cool when packed.

Should it seem desirable to display canned fruits, we would recommend that these be received just after fresh fruits have ceased to arrive and that quart Mason jars be used.

We recommend all shipments to be by express and that our society furnish each grower with two stencils, one to be used on one end of package, showing whom and where from, the other to be used on cover of package giving shipping directions. If this plan is deemed impracticable, we recommend the substitution of shipping cards giving the same information.

Compensation.—For all fruit sent under our rules and received in good condition, we suggest the following schedule of prices to growers:

For all fruit displayed in pint boxes, ten cents per pint; for each five apples, ten cents; for each five pears, fifteen cents; for each pound of grapes, ten cents. These prices shall include packages, packing and delivery at express office in all cases. We recommend that the president arrange a complete system of accounts and place the work of keeping them in the hands of the proper person or persons. The payment for fruits shall be due and paid at the close of the season for each fruit.

Premiums.—As an incentive to fruit growers to furnish the best possible samples of fruit, we recommend the offering of a liberal list of premiums. This plan we believe to be more economical and efficient than that of collecting by means of traveling agents.

Awards.—All awards or premiums made upon any collective exhibit or exhibits in competition with other societies or localities shall be the property of this society. All awards made upon individual collections or varieties shall be the property of the grower sending the fruit upon which such award shall be made.

Procuring Packages.—In order to secure uniformity and neatness in packages used in displaying fruit our society should make arrangements to procure and place in the hands of each grower who will ship fruit for the exposition, the sectional berry crates and pint boxes and California grape baskets. Label cards should be also furnished in order to secure accuracy and neatness.

Cranberries.—We presume the cranberry interest will be well cared for by the Cranberry Growers' Association, with whom we recommend the heartiest co-operation.

Disposition of Fruits.—It should be distinctly understood that all fruits paid for by this society or donated to it, shall be the property of the society, and may be disposed of as it shall see fit. It is proper to state that a set of proposed rules have been submitted to your committee with relation to the reception and disposition of fruits at the exposition, and that these were returned with suggested modifications. These rules fall in line mainly with this report and with proposals made from time to time by your committee.

Garden Vegetables—An adequate display of garden products is within the scope of our society, and we advise extending our plans to include these upon the same general plan as fruits except, perhaps, that of compensation.

Express and Terminal Charges—Our arrangements should be made to correspond with the rules and requirements of the Exposition in regard to these charges, and should be clearly stated before the Exposition opens.

Circulars.—A circular should be prepared as soon as possible setting forth our rules and methods in full concerning our proposed exhibit, and when approved, published and circulated. Also that a concise synopsis be arranged for the newspapers of the state.

Management of the Exhibit —For the installation and management of the exhibit, we recommend the employment of a reliable workman for the season. Also that at the beginning of the Fair, two persons be detailed from our society to superintend the exhibit and assist in its installation and continued maintainance—the one for one week and the other for two weeks. The second week, another person to take the place of the person detailed for one week who shall stay two weeks, and so on through the season, so that no two persons shall be there together longer than one week. We also recommend that the general management of our affairs connected with the World's Fair shall be vested in the president and secretary, assisted by one or more persons to be elected at this meeting

Respectfully submitted,

E. S. GOFF.

A. L. HATCH.

EXHIBIT A.

WISCONSIN STATE HORTICULTURAL SOCIETY.
Secretary's Office,
EVANSVILLE, WIS., OCT. 1, 1892.

Dear Sir:—It is the aim of the Wisconsin State Horticultural Society to have as complete and as fine an exhibition of Wisconsin's winter apples on the tables at the opening of the Columbian Exposition next spring as it is possible to make. To this end we ask your earnest co-operation. Will you not, therefore, select superior specimens of all standard varieties of apples or valuable seedlings of which you have a crop and that will keep in a good cellar as late or later than January 1st, as a contribution to our State exhibit and pack and ship the same according to the directions given in this circular? On arrival, the apples will be received and assorted by the committee and a suitable number of specimens selected. These will then be forwarded to Chicago and placed in cold storage, where they will remain until the opening of the Exposition.

THE AMOUNT REQUIRED OF EACH VARIETY.

Not less than six (6) specimens of a given variety are desired for one sample. When possible one hundred (100) specimens should always be sent. The aim is to secure a sufficient number of specimens of each variety to enable us to renew the samples upon the table as often as seems desirable until the beginning of the small fruit exhibition in June.

COMPENSATION.

The Society is willing to pay for samples furnished for this exhibition at the rate of two dollars ($2.00) per bushel, provided the number of specimens of one variety sent by one person does not exceed one hundred; but it must be distinctly understood that no inferior apples will be paid for. A reasonable charge for packages will be allowed in addition

PREMIUMS.

In order to encourage the cooperation of apple growers in making this exhibit as large as possible, the society has decided to offer premiums in accordance with the following conditions and schedule, the judges to be selected by the committee assisted by the President and Secretary.

Conditions for Competition.—Apples that do not usually keep, in a good cellar, until January 1st, cannot be entered for a premium, nor can a smaller number of specimens of one variety than six (6). Both quality and quantity up to one hundred specimens from one grower will be considered in the awards, but no apples that are considered by the judges unfit for exhibition will be awarded a premium. A "new seedling" is here defined as one that has not been propagated for sale outside of the county in which it originated.

Schedule of Premiums.—For the best all round collection of apples, $10.00; for the second best do., $5.00. For the first best collection of new seedling apples, $7.00; for the second best, $3.00. For the best collection of named Russian apples, $7.00; for the second best, $3.00. For the best lot of any one variety, $5.00; for the second best, $3.00. For the best lot of Wolf River, $1.00; Newell's Winter, $1.00; Wealthy, $1 00; Longfield, $1.00; Golden Russet, $1.00; Walbridge, $1.00; Talman Sweet, $1.00; Perry Russet, $1.00; Fameuse, $1.00; Northwestern Greening, $1.00

It is to be understood that the exhibition here proposed is the exhibit of the Wisconsin State Horticultural Society as a whole, and not of the individual apple grower who contributes to it. Should a premium be awarded this exhibit by the judges of the Columbian Exposition, such premium will be the property of the society. The name of the contributor of each sample shown, will, however, appear with the sample so that each individual exhibitor may be known. Should any individual grower desire to make an exhibit on his own account, for a premium, he is at liberty to do so, and it is to be hoped that some such exhibitions may be made, but in such case no aid can be furnished by the society.

Directions for Packing and Shipping.—It is very important that apples intended for cold storage be perfectly dry when packed, and the specimens least advanced in maturity should always be selected.

Each individual specimen must be wrapped in paper of soft texture, and the specimens of each variety must be placed, after the wrapping, in a paper or muslin sack which must be securely tied. A label giving the name of the variety, and the name and address of the sender must be placed inside the sack, and a second label bearing the same information must be attached to the outside of the sack. These sacks must be packed in some suitable package, sufficiently close to prevent shaking and plainly addressed to B. S. Hoxie, Evansville, Wisconsin. Send by express, (charges to be collected,) at such time that they will reach their destination not later than October 15th. At the same time send list of the varieties sent, specifying premium or premiums for which they are entered with bill at the prices named above, including necessary charge for package.

We desire to remind our apple growing friends of the honors borne off by Wisconsin at the New Orleans Exposition, and we earnestly hope that the interest manifested in our fruit exhibit at the Columbian Exposition will be such as to insure like honors the coming season.

Will you send the enclosed circulars to any of your friends whose names do not appear in our printed list of members?

M. A. THAYER, *President.*
B. S. HOXIE, *Secretary.*

E. S. GOFF,
A. L. HATCH,
A. J. PHILLIPS,
WM. A. SPRINGER,
} *Committee.*

EXHIBIT B.

List of premiums awarded for apples for World's Fair. Awarded October 21st, 1892.

First premium for best allround collection, Joseph Zettle, of Sturgeon Bay	$10 00
Second premium to A. L. Hatch, Ithaca	5 00
Best collection of new seedling apples, Wm. A. Springer, of Fremont	7 00
For second best Joseph Zettle	3 00
For the best collection of named Russian apples, Joseph Zettle	7 00
Second best, A. L. Hatch	3 00
For the best lot of any one variety, A. D. Barnes, of Waupaca	5 00
Second best, Mr. Faulks	3 00
(apples sent in by W. A. Springer.)	
Best lot of Wolf River, Mr. Taggart	1 00
Best Newels Winter, A. L. Hatch	1 00
Best lot Wealthy, O. C. Cook, Oconto	1 00
Best lot Longfield, A. L. Hatch	1 00
Best lot Golden Russet, Joseph Zettle	1 00
Best Walbridge, O. C. Cook	1 00
Best Talman Sweet, A. L. Hatch	1 00
Best Perry Russett, Wm. A. Springer	1 00
Best Fameuse, A. L. Hatch	1 00
Best North Western Greening, A. D. Barnes	1 00
Best McMahan White, A. L. Hatch	1 00
Best Ben Davis, O. C. Cook	1 00
est Utter, O. C. Cook	1 00

Signed. E. S. GOFF,
A. L. HATCH,
J. C. PLUMB.
Committee on awards.

List of Fruits Packed at Evansville, Wis., October 20 and 21, 1893, for World's Columbian Exposition.

		Barrel number.										
		1	2	3	4	5	6	7	8	9	10	11
Alexander	O. C. Cook						1					
Allen's Russet	Joseph Zettel				1							
Antinovka	Joseph Zettel			1								
Bailey Sweet	Joseph Zettel				1	1						
Balch	Wm. Springer	1										
Barnard's No. 1	Wm. Springer	1										
Barnard's No. 2	Wm. Springer	1										
Barnard's No. 3	Wm. Springer	1										
Barnard's No. 4	Wm. Springer	1										
Bell Fleur	Joseph Zettel		1	1								
Ben Davis	A. D. Barnes						1				1	
Ben Davis	O. C. Cook					8						
Ben Davis	Wm. A. Springer	1	1	1	1	1	1	1	1	1	1	
Ben Davis	Wm. A. Springer											
Ben Davis	Joseph Zettel						2					
Bennett's Blush	Wm. Springer	1	1									
Bennett's Reds	Wm. Springer											
Bennett's Seedlings	Wm. Springer	1	1									
Black Detroit	Wm. Springer	1	1									
Blaine	Wm. Springer	1	1	1	1	1						
Blue Pearmin	J. Zettel			1								
Bogdanoff	J. Zettel		1	1								
Crocker	J. Zettel											
Crocker	Faulkes							1	2	1		
Crocker	Wm. Springer	1	1	1	1	1	1	1				
Duchess Seedling	J. Zettel		1	1								
Dutch Mignonne	Geo. Geffrey	1	1	1	1							
Evaline	W. Springer	1										
Fameuse	A. L. Hatch		1	1	1	1	1	1	1	1		
Fameuse	J. Zettel										1	
Faulkes' Seedling	Faulkes				1	1						
Flushing Spitzenburgh	W. Springer	1	1	1	1	1	1	1	1			
Flushing Spitzenburgh	J. Zettel			1						1	1	
Golden Russet	W. Springer						1					
Golden Russett	J. Zettel			1	1	1						
Haas	O. C. Cook				1	1	2	2	1	1	1	
Haas	A. L. Hatch	1	1									
Hardin Seedling	W. Springer	1										
Hibernal	A. L. Hatch		1	1								
Hinkley's Russet	W. Springer	1	1	1	1							
Jenney	W. Springer	1	1	1	1	1	1					
Jenney's Sweet	W. Springer	1	1	1	1							
Johnathan	J. Zettel		1	1	1							
Longfield	A. L. Hatch	1	1	1	1	1	1	1	2	3	2	
Longfield	J. Zettel							3	1			
Manning's Russet	W. Springer				1	1	2	1	2	2	1	
Mary	W. Springer				1	1	1	1	1			
Matthews Russet	W. Springer	1	1	1	1	1	1	1				
Mawhinny Golden	W. Springer	1										
May Seeknofurther	J. Zettel		1	1								
McIntosh Red	J. Zettel		1									
McMahon	O. C. Cook							1	2	2		
McMahon	A. L. Hatch	1	1	1	1	1	1	1	1	1	2	
Myron	W. Springer					1	1					
Newell	A. L. Hatch	1	1									
New Hampshire	A. L. Hatch		1	1	1							
North Western Greening	A. D. Barnes			1	1	1	1	1	1	2	2	
Perry Russet	O. C. Cook				1					2	3	
Perry Russet	Faulkes						1					
Perry Russet	Springer	1	1	1	1	1	1	1	1	1		
Perry Russet	J. Zettel		1	1	1							
Pewaukee	O. C. Cook						1	1	1	1		
Pewaukee	A. L. Hatch	1	1									
Pewaukee	J. Zettel			1	1	1						
Plumb's Cider	O. C. Cook				1	1	1	1				

List of fruits packed—Continued.

		Barrel Number.										
		1	2	3	4	5	6	7	8	9	10	11
Plumb's Cider	A. L. Hatch	1										
President Smith	W. Springer				1	1	1	1				
Randall Seedling	W. Springer	1	1									
Red Romanite	A L. Hatch	1	1									
Red Romanite	J. Zettel			1	1							
Rich's Greening	W. Springer	1	1									
Russet Seedling	W. Springer	1										
Scallop Jillefleur	J. Zettel		1	1	1							
Scott's Winter	J. Zettel	1		1								
Seedling Vincent	W. Springer	1										
Seedling	J. Zettel		1	1	1							
Smith's No. 3	Springer											
Sweet Seedling	J. Zettel			1								
Tallman Sweet	J. Zettel								1	1		
Tallman Sweet	A. L. Hatch	1	1	1	1	1	1	1				
Utter	O. C. Cook				1	1	1	5	2	1		
Utter	Springer	1	1									
Utter	J. Zettel			1								
Walbridge	O. C. Cook			1	1	1	1	1	2	1	1	
Wall's No. 1	W. Springer	1	1									
Wall's No. 2	W. Springer	1	1									
Wall's No. 3	W. Springer	1	1		1	1	1	1	1	1	1	
Wall's Sweet Russet	W. Springer	1	1									
Watterson's No. 2	W. Springer	1	1		1	1	2	2	1	1	2	
Watterson's No. 3	W. Springer				1				1		1	
Watterson's No. 4	W. Springer	1	1	1	1	1						
Watterson's No. 5	W. Springer	1	1	1	1	1	1					
Watterson's No 6	W. Springer	1	1	1	1	1						
Watterson's Russet	W. Springer	1	1	1								
Wealthy	A. D. Barnes				1		1					
Wealthy	O. C. Cook					1		4	2	2	2	
White Russian	A. L Hatch		1	1	1	1	1					
Wolf River	Faulkes									1		
Wolf River	W. Springer						3		2	1		
Wolf River	Taggart					1	1	1	2	1	1	
Wolf River	J. Zettel			1	1			1				
Wrightman	Young				1	1	2	1	1	3	1	
Kieffer Pear	J. C. Plumb		1	1								

Barrel No. 12, packed at Madison by E. S. Goff, contains: Patten's Greening from Mr. Townsend, of Baraboo, in bottom; Antinovka from a blacksmith of Baraboo; Sweet Seedling from A. J. Phillips, West Salem, Wis.; Avista from A. J. Phillips. West Salem, Wis.; Plumb's Cider from D. M. Lewis, Delton, Wis.; Walbridge from D. M. Lewis, Delton, Wis.; Scott's Winter from D. M. Lewis, Delton, Wis.; Hallas Winter from A. L. Hatch, Ithaca, Wis.; Rawlins' Russet from S. I. Freeborn, Ithaca, Wis.; Lawrence Pear, from Geo. Jeffrey, Milwaukee, Wis.; Beurre d' Anjoudo from Geo. Jeffrey, Milwaukee, Wis .

Barrel No. 13, packed by D. E. Palmer, Baraboo, contains: Seedlings, Walbridge, Fameuse, Newell Winter, Talman Sweet, Pewaukee and Golden Russet, all from Mr. Palmer.

Box No. 1 contains Keiffer Pear and Josephine de Maline's do. from Geo. Jeffrey, Milwaukee.

It has seemed to your committee that some of these points should be settled at this meeting because this is the last public meeting we shall hold before the world's fair and we have therefore outlined a plan for future work.

A. L. Hatch.—I want to further explain, and then I want to move the adoption of the report. (Exhibited samples of boxes and crates for berries.) We have recommended that not more than two pints be sent by one exhibitor at the same time. We have a method with regard to labelling these. The exhibitor will pack in the box just what he wants to send and mark the name of the variety on it; these would be adapted to show all small fruits, as well as cranberries. I want to make a synopsis of this, that is, a few salient points that I want to fix in your minds. If we adopt this report it will be incumbent upon us to prepare a premium list. It should be stated that the railway companies have adopted rules that exhibits must be handled by the exposition companies' men, they will take them from the depot and put them into the exposition buildings adjacent thereto. We have recommended a certain quantity of apples and certain kinds to be sent. If we adopt this plan for this fruit we shall have to place boxes in the hands of the shippers. I move that the report be adopted.

A. D. Barnes --I object to stencilling any exhibits except with the word "Wisconsin."

President.--Directions should be put on the end of the crate, but the growers name should never be put there. Directions should be marked on both ends, then express messengers can readily see where it is going to.

A. L. Hatch.—The recommendation is in regard to the shipment of them. I am not strenuous about the exhibitor's name being stencilled on the boxes. It would be necessary to arrange a system of accounts and bookkeeping so that it can be accurately attended to.

Secretary.—Since my last interview with Chief Samuels I am quite sure that boxes or packing cases will not be allowed to go on the tables.

Since Mr. Regan told me how Mr. Samuels was handicapped, I think we as a state, can say how we will ship our fruit, but we cannot say how it may go on the table. Mr. Samuels has stated that the small cases seem to him to be the best, but still he may be overruled; when we find out from him we will know just what to order.

Geo. J. Kellogg.—So far as the report has been read, I see no objection to adopt.

Report of committee was adopted by vote.

Wm. Fox.—There is another point; a personal exhibitor should pay his own freight. Mr. Barnes objects to the name being put on the exhibit.

A. D. Barnes.--I should be very proud to have my name go on my fruits but I do not think it is right.

Franklin Johnson.--I do not see the force of Mr. Barnes' objection. It would add to the interest of the exhibit for me to know if it came from Mr. Baumbach's grounds or mine.

A. L. Hatch.—I move we endeavor to have the name of the fruit grower on all fruit sent there.

Prof. Goff.—We are wasting time in discussing this question. Mr. Samuels has told us exhibitors could put their names on, but that will be decided by the powers that be, and not by this society.

Mr. Ramsey.—It has been requested of each grower of hops that he put his name on the hops he grows.

Motion prevailed.

A. L. Hatch.—I move that Prof. Goff be added to the committee to arrange the exhibit.

Carried.

A suggestion was made that a bulletin be sent out each week to the local societies and C. E. Tobey suggested that a bulletin be sent to each member weekly, that it would be only a slight cost to send out a mimeograph copy. It was decided by vote of the society to leave the subject of sending out a bulletin to the committee.

C. E. Toby moved that, "it is the sense of this meeting that weekly reports relating to the exhibit be sent to the members of this society."

Carried.

Secretary—I wish to speak of an exhibit of vegetables; we have space assigned to us for such an exhibit. J. M. Smith, in a letter written to me, thinks we ought to have vegetables arriving early and late all through the season. It may be considered proper to have such an exhibit come in under the head of Agriculture, but Mr. Smith thinks we ought to have asparagus, lettuce, etc., come in under our exhibit. I think anything that is reasonable they will be in perfect sympathy with, as in everything.

President—You remember it came up in our society a year ago, how much would be necessary to make an exhibit. We finally made up a report and I went down to meet the Board in Milwaukee. As I entered the room the committee on education was making its report and they said, "unless we can have a certain amount we will not try to do anything at all." I made up my mind if we got "anything at all" we must present our needs in a different manner. I waited, and when my time came to make my report, I told them the State Horticultural Society was going to make an exhibit, and I thought we would need $10,000 to make the exhibit; they seemed very favorable to us and immediately set aside $2,500 for us to get ready with.

Adjourned.

WEDNESDAY MORNING, FEBRUARY 8; 9 A. M.

THE FUTURE OF APPLE GROWING IN WISCONSIN.

J. C. PLUMB, Milton.

To many it has no bright side, and to most so little of promise, that every salesman's hook must be baited with some novelty, and too often the biggest liars get the most bites, and not all greenhorns who are caught, either.

Since I have entered my fiftieth year of nursery experience in Wisconsin, an old friend asked what I would do if I could live life over again. My answer was, "Experiment! Keep trying! Life is but an experiment."

If the past experience has any one lesson for us of more value than another, it is that in the northwest climate is king.

The winter of 1855-6 was the first reminder of this factor in our estimate of the special needs of the northwest in its pomology. From 1860 to 1870 I was called a crank for advocating the "north side of the hill site for the orchard."

The editor of the old Wisconsin Farmer said: "Can't endorse a theory so opposed to all former teachings."

It is gratifying now to see every prolific writer urging this as a strong point in apple culture in the west. I think it safe to say that 100,000 apple trees are planted annually in Wisconsin, and that not over one fourth of them are adapted to their location.

Hence three-fourths to nine-tenths of them prove a bad investment and a discouragement to the planter. Must this continue while our state is importing its million dollars worth of apples yearly that could largely be grown within our borders?

Briefly I will give you my view of the problem. Successful apple growing in Wisconsin and the northwest is based on two primary conditions.

First—Adaptation to absolute conditions of climate and soil, in the selection of varieties, and in culture.

Second—The prompt and thorough use of insectides to save the tree and fruit from the increasing hoard of insect and vegetable parasites.

Under the first head we would choose elevated, well drained locations and a firm calcarious soil and sub-soil with good self drainage if possible, but if not, artificial drainage must be secured. Would plant only varieties which have proved themselves worthy in similar location.

Our orchards of the future will be mainly of early and fall apples. The apples which mature in midwinter and spring in an ordinary cellar will not furnish the great apple crop of the northwest, as they have not; not because we have not such that are hardy enough, but that those that are thus hardy connot be grown in competition with the finer class of apples from more favored regions east and south of us.

For example, compare the May Seeknofurther with the Westfield, the Repka M with the Winesap, the Windsor with the Wagoner, the Northwestern Greening with the R. I. Greening, the Avista with the Janet, the Malinda with the Northern Spy, the Pewaukee with the King of Tompkins, and so on through the list.

The first named in each example is of our best hardy winter apples, and with others coming give us variety in our winter apples for home growing. But the quality of all of these is only second rate as compared with their opposites named, when grown here. This fact has its basis on the principle that extremes of desirable qualities in fruit and tree may not be expected in the same variety, and I believe this to be a universal law of vegetable if not of animal life.

Our extremely hardy early and fall apples are good enough to meet the popular demand, and as they can be produced as cheaply here as anywhere, the question is how to utilize them.

Cold storage is the key of ultimate success in commercial orchards for the northwest.

Such varieties as the Duchess, Wealthy, Wolf, McMahan, Utter, of acceptable quality can be grown in three fourths of our state with great success, and in unlimited quantities. Their fruit matures and must be gathered from sixty to ninety days before winter, so the tree has time to recuperate before severe cold, and therefore can endure the winter.

The crop of fruit having been put in cold storage from September 1st to October 1st will be in perfect condition January 1st for the local market—at equal prices with imported fruit.

Cold storage is not a costly way of holding back perishable fruit. One cent per dozen is said to be the average cost of thus holding eggs for six months.

On the same ratio twenty-five cents per barrel or ten cents per bushel would hold the fall apples until their market value would be doubled.

This is an age of "Cold Storage" for the products of the cow and of the hen—and if apple growers do not avail themselves of its advantages it is simply for the want of enterprise.

On the second topic of our insect and fungoid enemies I shall say but little, for every wideawake fruit grower is in for a trial of some of the various compounds and machines in vogue for the speedy destruction of these pests. And none too soon, for it is certain we can no longer rely on the natural remedies for the destruction of the Codling worm, the curculio, the leaf rollers, the canker worm, aphis, and other bark lice. These all are more or less abatable by poisonous spraying.

The prevention of destructive fungi by chemical compounds is no longer a problem but a fact which is beyond dispute, and so with clear skies and these helps at hand the outlook for home and commercial orcharding in our state is vastly brighter than it was ten years ago.

But some things need to be known more than ever.

First—Tree planters must avail themselves of the helps of times such as horticultural reading and the experience of others; they must take the time to not only experiment but look up the conditions of success and of failure in their respective neighborhoods. Local horticultural societies should be organized in every county and often in a township, to cultivate and stimulate the taste and love for the good things, and how to avoid losses in horticultural pursuits.

In short a more intelligent pursuit of and more practical knowledge of fruit growing is needed and is within easy reach of the people.

Second.—*A finer sifting of varieties.* It was parting from old friends to give up our eastern favorites, and the invasion of the Russian class has cost the northwest some hard experience, but the few that will stay and pay we are glad to have for their infusion of new blood if nothing more. Our own northwestern seedlings are giving us varieties of most general merit of any we have tried, excepting perhaps the Oldenburg.

Of the 300 new varieties I have tried in nursery only six can I recommend for general culture in southern Wisconsin to-day, namely: Wealthy, Plumb Cider, Wolf River, McMahan, Windsor, Northwestern Greening, and of the 500 old and new, Russian and all, only 5 to 10 can be recommended for any one locality in Wisconsin. The future apple tree planter needs to know and ought to know the ten best varieties for his locality for a family orchard, and the two varieties which he can best plant by the acre or ten acres, as they do in Missouri the Ben Davis by the 100 acres in a lot.

Here our Experimental Station work, and Observation Committee work should serve us good and reliable data for the different locations of the state.

DISCUSSION.

O. F. Brand from Minnesota, and W. A. Burnap from northern Iowa, were made annual honorary members, and invited to participate in the discussions.

W. D. Boynton moved that the courtesies of annual honorary membership be extended to Mr. Shepard, the representative of *Orange Judd Farmer*. Carried.

Moved and carried that Mr. H. P. Thurston, of *Farmer's Review*, and Mr. Corse of *Wisconsin Agriculturist* be made annual honory members.

A. L. Hatch—I beg the privilege of giving my time on this subject to Mr. Cook and Mr. Menn of the northern part of the state.

O. C. Cook, Oconto.—Mr. President and members of the Horticultural Society: I did not come here to give any instruction. I came here to learn something. I think the better way would be for you to ask questions and let me answer them. I am some ways from Lake Michigan, fifty miles, and five miles from Green Bay, thirty-three miles north of the city of Green Bay. I have twelve hundred trees in bearing and had fifteen hundred bushels of apples; not near all of the orchard was in bearing last year. Some of my trees have been fruiting twenty-three years. We are not orcharding for fun, we are at it to make money. We used to have for early fruit the Tetofsky; we have replaced it now with the Yellow Transparant; the next early is the Duchess. We consider the Transparent and the Duchess the best for that season of the year. The Wealthy would come on next, and for the next would be that much abused apple, the Haas. McMahan is a tree you cannot kill, at least I can't; it's an apple you will get the most premiums on, but it is a variety that bears too much. I have eight varieties that are profitable. For winter apples to sell next spring I would recommend the much condemned Walbridge. We all let our trees bear too much, especially the Wealthy and Duchess. A tree should never be allowed to bear so it needs propping up. I have had experience with trees grown from the south, and a sad one, too, for my pocket-book. I sent south two or three years ago for five hundred Duchess, thinking it made no difference where the Duchess were grown; the next year every one of those Duchess trees were killed down to the snow line while my northern grown trees were all alive.

A. D. Barnes.—Was it not due to the fact, Mr. Cook, that your trees had been planted some time, while the new ones being recently planted were not fully established and consequently less able to withstand the winter?

O. C. Cook.—What do you think my customers would have thought about it if I had sold them some of those trees and they had lost them all? We have had such failures in Oconto county. There has been over $230,000 worth of trees there, and not over $5,000 worth there now. We want northern grown trees for Wisconsin; the rule is, for Wisconsin, to buy of the nearest responsible grower.

Q.—You said you had eight varieties of apples that were profitable. You have named six, will you please name the other two?

O. C. Cook.—Utter's Red and Switzer; the Longfield is not hardy for us up there.

W. D. Boynton—Would you say trees grown in Baraboo would be good for the whole of the state?

A.—I should.

W. D. Boynton—Would you just this side of the Mississippi for Iowa?

A.—Yes, if you grow your trees right and do not force them. I would give Switzer the preference over the Fameuse; it is almost the same thing anyway; it has never hurt with us and it will keep until this time.

J. S. Harris—It is not the Switzer, then.

Q.—Have you any variety that you would warrant to live on black soil, level land?

O. C. Cook—I don't know. We do not have any of that soil. If there is any variety it is the McMahan. I have the McMahan eighteen years old and the Switzer about ten years old. Switzer looks just like a nice smooth plum tree and the apple is a small apple about the size of a Famense.

A. L. Hatch—Do you grow cultivated plums and are they a success?

A.—Yes, we grow about twenty kinds; the Abundance is the best.

Q.—How do you like the Arctic?

A.—It is a slow grower; we want a plum for profit; we do not want it to stand ten years and not give any fruit.

M. J. Wragg—I am surprised to hear about planting that Botan or Abundance so far north because in central Iowa it is only half hardy. Has it fruited with you and is it a good bearer?

A.—It has fruited. It has been as cold as 22 degrees below zero this winter.

Geo. J. Kellogg—How low has it been since you have been orcharding?

A.—I do not know, the thing broke.

J. C. Plumb—It occurs to me that when Mr. Cook planted out those five hundred Duchess that some one had sent him some tender varieties instead of the Duchess.

O. C. Cook—I hope Mr. Plumb will not carry the idea that after I have been handling trees fifty years I do not know the Duchess.

President—One thing we ought to take into consideration is Mr. Cook's location. Experts have been up in that section of the state and they tell us they have as favorable conditions for fruit growing as they have in the peach section in Michigan.

Geo. J. Kellogg—I apprehend that Mr. Cook's five miles from Green Bay tempers his location and gives him the advantage.

M. J. Wragg—I do not doubt that Mr Cook has the true Botan because we know they can grow fruit up around Lake Michigan that we cannot grow in central Iowa, and I think we had better follow isothermal lines instead of state lines in selecting our locality and varieties.

O. C. Cook—We have not been troubled with the blight.

W. J. Bendixen—Did *any* of those eight varieties you gave blight?

A.—No, sir.

Prof. Goff—It appears to be true on both sides of Green Bay that the blight is less than elsewhere.

Geo. J. Kellogg—Have you ever been troubled with the coddling moth or curculio?

A.—No, sir, we never have to spray there.

W. D. Boyton—This discussion seems to have gone into all tree fruits and I would like to ask if Mr. Cook has had experience with the pear?

A.—Yes, about $1,000 worth.

HOW TO GROW APPLES.

By J. J. **MENN**, Norwalk.

My soil is a clay soil. I have tried orcharding in the valleys and it is a failure there so I tried it on the ridge. I have been assigned the subject, "How to Grow Apples," and I presume it means how to grow them in Monroe county. That there have been more failures than successes in apple raising in this county we all know. I venture to say but very few have made orcharding pay, counting cost of trees, labor and land.

What are the causes for failures? 1. Our changeable winters; 2. Poor locations; 3. Varieties not adapted; 4. Poor culture; 5. Our insect enemies, also stock running on the orchard. Now with the experience of the last eight or ten years can't we plant to profit? Do you know of an orchard or even single trees that have paid for the last ten years; if so then look at its surroundings. Do we not find it on high ground, clay soil and usually on the north side of a hill, although there might be an exception of a few Duchess and Wealthy's.

There are now thousands of trees dead in this county, which if planted in the right place, and had been properly cultivated and pruned and manured would be alive to day. I venture to say there are now hundreds of acres in this county which could be successfully planted to apple trees and fall and winter apples at that, and that it can be done I aim to set forth in this paper.

First I will say where I should not plant. It is useless to plant in the valleys that are subject to the late frosts in the spring and early fall. In valleys running north or northwest there is never as much danger as those running south or east and even on sandy soil, as we find around Sparta, it will not freeze near as quick as in the Moore's creek valley. In selecting the site for our orchard, where these late frosts occur, we must by all means get above the frost line, and this we find is about 100 to 150 feet below the top of the highest ridges; if I could not do this then I advise you not to plant. In selecting the site for a new orchard we must take the highest and dryest land we have, if possible clay soil and lime stone for subsoil; have a northern slope if possible! even if we've got to go to the furthest end of the farm. Remember the right site is the first step toward success.

If the land is not improved I should clear it in the spring, break it in June and sow it too buckwheat. In the fall plow it again and not too shallow. If cultivated land is to be used, plow it in the fall, then by the next spring we are ready for planting. If the land is poor, I should manure it in the fall before plowing. Better not have it too rich at first; if too rich, it would induce to large a growth the first year; the wood don't harden for winter.

After we have selected the site for our orchard and we are ready for planting, the next question is, from whom are we going to buy our trees and what varieties shall we plant? I would say the best guide in the selection of varieties is for each to plant of such varieties as are found successful in locations similar to that each must plant upon. (Correspond with men that have experience, give description of your location.) Better not plant too many varieties.

As from whom to buy our trees, my advice is not to buy from every tree tramp that comes along, but correspond with nursery men in our own state that we know are selling sound trees, or, if an agent for a nursery in our own state lives near us, whom we know to be reliable, buy from him.

In the spring as soon as the land plows nicely, I plow a back furrow where I wish the rows to stand (better have the rows run from southwest to northeast, then one tree will protect the other from sun scald, to some extent, but the location would have a good deal to do with this), then as soon as the trees arrive, or if they have been heeled in over winter, we are ready for planting.

Keep the roots of your trees well covered with a wet blanket while laying in the field. Then take a shovel or spade and dig the hole where the back furrow was plowed. Dig large enough so you have room to spread out the roots nicely, but don't dig too deep—leave the sub-soil alone. After the tree gets a good start the roots find their own way into the subsoil. On clay soil water will stand and collect under the trees.

Have a pail of water at hand, go to your trees, take one tree, and with a sharp knife cut off all bruised roots, then dip the roots in the pail of of water. Set your tree with its largest branches toward the southwest, work the soil well under and around the roots with your hands. Fill the hole half full and then press it down lightly with your foot. Fill up the hole but don't pack it down with your foot. If it is very dry, a little water may be used, but if the soil is moist, no water is needed. Set the tree a little deeper than it stood in the nursery. Repeat the same until all are planted. Always plant trees of the same variety together in the same row, and they all ought to be registered by number, so that when they commence to bear we can tell what they are. After all are planted, take a bushel basket full of forest leaves and put around each tree, and throw on some dirt to hold them down. The leaves hold moisture better than any other mulch.

This is my way of planting. Out of 150 so planted one spring, only one failed to grow, and I only used three pails of water, and all that I have planted since, in this way, grew, unless they were damaged trees.

If nurserymen would only hire men that had experience in apple raising to sell their trees, better results would be obtained. They could show the farmer where to plant his trees, and printed instructions in English and German, "How to Plant and Take Care of the Orchard," ought to go with every order for trees. These instructions ought to be similar to those that

Mr. M. A. Thayer, of Sparta, distributes free with his small fruit. A good deal of future success lies with the nurserymen.

Plant to corn or howed crop the first year and as many years thereafter as you can cultivate your orchard without injury to your trees.

Cultivate till the first week in July, then stop all cultivating for that season. If cultivated too late they grow too late in the season.

Immediately after planting wind the trunks of the trees with a band of marsh hay to protect from the sun, leave it on over winter, or what is still better, take six or seven lath and weave them together with wire and set them around the tree. The lath ought to be long enough to reach from the ground to the branches; these will also protect the young trees from mice and rabbits. This device was invented by A. J. Phillips, of West Salem.

All pruning should be done while the tree is young. Have the tree form its heaviest top towards the sun.

In the east they prune to let in the sun, and we want to keep the sun out, and by all means keep the sun from shining on the trunk all day.

On January 23d, at 2 o'clock P. M., I took a thermometer and went to a little oak tree three inches in diameter and held it up to the tree on the north side three feet from the ground and it was just at freezing or 32; then I held it on the south side and it was seven degrees warmer or 39. At the same time the wind was blowing quite hard from the west. This shows that freezing and thawing goes on at the same time, and a tree exposed to the rays of the sun year in and year out will surely die.

After your trees commence to bear stop all pruning, but rub off all suckers when they start, but commence to manure your orchard, and the best guide as to how much manure is required is by watching your trees you can tell.

Now, there is one thing you must bear in mind and that is, that there are enemies to look after and the first thing you will know is that the mice have girdled some of your best trees (unless you watch very closely). They work mostly close to the ground, and often below the surface. If your trees are wound with hay then you must bank them up to the height of a foot in the fall. If you use lath be sure that the mice don't get under them.

I bank my trees but I first dig away all the leaves and sod and then bank them up. Now there are insect enemies and we must look after them. Then when we cultivate our trees we will bruise some and also heavy storms in summer will blow some down. As a guard against the storms, better have a belt of timber on the west and northwest side; if I could not have that I would plant trees for a wind brake. Now we see in order to keep up our orchard we must replace those that will die. Now I know by experience the more we look after our orchard and take care of it, the less re planting we will have to do.

Now I am well aware that our trees will not live as long as in the East or

South and that we can't compete with either in raising winter apples for the market, but I do know by experience that we can raise enough for our own use, (yes, and I think I can raise a few more) and unless we do raise them our families won't have half enough.

But I hear some one say I can take the same land and put it to other crops and buy apples cheaper than I can raise them. But will he do it? Let Mr. Phillips or Mr. Auy come along with a whole load of apples and try to sell them to him. Will he buy them? No, he won't have the money to spare; got to use it for some other purpose, and his family will go without the best of fruits; and still another one says my land is not as good for apple raising as my neighbors. How do you know? Have you given it a fair trial? I say we don't know what our land will do for us until we give it a thorough trial.

Now why can't the neighbors of Mr. Booring in the town of Wellington, or those of Mr. Phillips at West Salem, or Mr. Sam Auy's all raise apples as well as they can; there is no difference in the land. I say they can by just going into it in a business like way.

Why is it that so many of the citizens of Sparta and vicinity are going into the small fruit business? Isn't it because a few that started the business made a success of it? And it will be the same with apple raising in the near future. The sooner we go into it the better. The health of our family demands it and we will enjoy it and our sons and daughters will never forget the dear old home long after we have passed away.

I cultivate my orchard both ways which gives it a good drainage.

DISCUSSION.

Geo. J. Kellogg—There is no question but that paper is valuable although there are some points we might question and that is manuring the land before planting the trees.

J. J. Menn—Under the circumstances I was bound to raise apples in Wisconsin if I could get suitable land. I did not have the location on my farm and so I bought a piece some distance from it. I told the boys and girls they could eat all the apples they wanted to if they would not carry any off, and so they go there, they go on Sundays and eat what they want to. I have never had any trouble about their stealing the apples.

Q.—Do you advise hoed crops between the tree?

A.—I do, sir, we want to stir the soil, by stirring it we keep the moisture in the ground. In the old orchard we sow peas. I would recommend cultivating as long as you could.

Q.—Do you ever keep your orchard in clover sod?

A.—No, I do not think I ever will.

Q.—Will the present winter prove disastrous to Wisconsin apple trees

A.—I do not think they will be hurt; they hardened up well last fall.

Q—.What difference does it make which way rows run if you put them in square?

J. J. Menn—After trees begin to bear I do not do any pruning. I had one tree of Golden Russetts that had so many branches on it that I pruned it about the time the sap had started nicely and it killed right down with blight while others near it were not affected. I would prune blighted limbs off.

Q.—Why do you stop cultivating in July?

A.—To allow the wood to harden up. When we find the wood has not well ripened in the fall we know it will kill down. Cultivating up to fall tends to keep the tree growing and does not let it ripen up. I have adopted the plan of running a back furrow. I dig down and set the tree right in here, and it acts as a drainage. I do not dig down into the subsoil.

J. C. Plumb—I have only words of commendation for the paper by the gentleman from the north. I used to say when I visited Mr. Phillips on the hill, "there are thousands of such locations as yours in this state, why don't they try them?" Mr. Phillips' orchard was an accident; a poor Norwegian bought the land and put out the orchard, Mr. Phillipps bought the land of him. I do not know of any orchard east or west, of any dimensions, that has been a success planted quintex, and my advice would be, do not plant in broken rows or quintex, plant so you can cultivate one way, north and south. When a man talks of draining the earth away and putting it back again, that is culture.

Daniel Huntley—I want to say one word about running your rows north and south. I don't take any stock in rows north and south if the land slopes east and west; you want your rows to run the way your land slopes. Five hundred dollars is what a man told me it cost him to change his grapery because the rows did not run with the drainage of the land. We like pears at our house and we thought we would set some every year even if we did loose them but they beat us.

President—We will be glad if Mr. Brand, of Minnesota, will give us a little of his experience.

O. F. Brand—If you will ask questions, Mr. President, I will endeavor to answer them.

Q.—What is the best winter apple?

O. F. Brand—The peerless. In 1886 I began to make orcharding my entire business. I used to visit my friend Harris and look at his orchard. I saw in 1871 one hundred and seven different varieties in bearing in our state and going over the same ground in 1873 there was not a dozen of them left. Since that time all we could put confidence in was the Duchess. The Haas and Price's Sweet killed in the winter of '82; the Wealthy and many Russian varieties killed in the winter of '84. I had on our own place sixty varieties of Russian apples and all that had not killed previous to '84, all killed that winter but seven trees. The future of apple growing in the northwest must be from seedlings. Some have said that it would be from seedlings from the Duchess, but they do not perfect the fruit because they do not have the leaves. Last June we had the most peculiar experience we have ever had. Between the eleventh and fifteen of the month the trees stopped growing. The Duchess went on and perfected a fine crop of fruit. The Perless originated from a seed of the Duchess twenty-five years ago; the seed was grown in timber soil; it was evidently a cross between the Duchess and the Tallman Sweet as Tallmans were growing by the Duchess. Its color is striped, red on yellow ground, not so striped as the Duchess, more red. I had last summer in nursery over five thousand Peerless. There was some injury to the foliage of Hibernal but not so much as to some other varieties. Young trees of Tallman Sweets were injured somewhat, while the Peerless went on and made a growth of one and one half feet. The Peerless was not benefited by the mulching; it grew just as well where not mulched. The Hibernal was much benefited and where there was no mulching there was much root killing, while there was none in the Peerless. I advocate that it is owing to the peculiarity of its leaf.

A. L. Hatch—I have no paper but I have been intensely interested in the remarks that have been made. I suppose there is no way of judging the future of apple growing but by the past and present. I want to call your attention to a line of progress that has been preached about ever since the organization of our society, and has only yet been touched upon, and that is the growing of seedlings for our new fruits that shall prove hardy and reliable. There is one intelligent grower in this state that is growing seedlings. Prof. Goff has taken up the work in this line and here are five seedlings, two show seedling apples from fruit tables I, picked up, not for show purposes, but they are some my brother picked up, and they show five distinct varieties. It has been the practice of Mr. Freeborn to plant one seed each year from a peck of apples. Here is a seedling that asserts the parentage of the Longfield; another shows the parentage of the Tallman; here is one that shows a parentage of the Newell, this is one showing the influence of the Fameuse. I present them to the members of this society as the most commendable effort ever made in this state. I believe there are places in Wisconsin that are second to none in the world for apple growing. I regret exceedingly that Mr. Zettle is unable to be here. Where you can grow Green gage and Lombard plums, where you can grow the Johathan apple, there is no reason why apples cannot be successfully grown in Wisconsin.

Prof. Goff—While I have some seedling apples growing I have none that have yet produced fruit. I visited Mr. Freeborn's orchard last fall and there found seedlings of better quality than I have seen. It is not true, the old statement, that the quality of the seedling is not as good as the parent tree.

J. C. Plumb—This eulogy of Mr. Hatch of the Michigan of Wisconsin I can appreciate. For thirty-five years I have been travelling around this country he speaks of, and I have said, "if some shrewd Yankee would buy this land he would make a fortune." I want to say a word with regard to Mr. Zettle's fruit. A young German came to buy apples of me. I asked him if he knew Mr. Zettle and if he grew many apples? "Why, yes," he said, "he loaded a sloop with them this year and sent them down to Chicago."

Adjourned.

WEDNESDAY P. M.

M. J. Wragg, Iowa, was asked to talk on cherries and plums and responded as follows: "I did not come here to teach anybody, I came here to learn. I might say by way of preliminary remarks that the cherries we have budded is a stock that was not in any way adapted to the cherry. We can work on the Mahalab and the tree just exists by connection. We have twenty experimental stations in our state, we have tried a cherry from your state quite successfully; a little red cherry called Prunus Philadelphus. You may take any of the cold juice cherries and they will not unite at all on the Mahalab. The stock from which we hope to get many bushels of seed, from your state, to plant for stock to to work on is the little red cherry.

"In plums we have found out we must stick to the stock you have, in order to grow them successfully. Wherever our long lived plum trees are that are fifteen or twenty years old you will find they are the native stock, number 62, or Bessarabian cherry, has been fruited and planted all over northern Iowa and I do not know of any one who has condemned it. It is grown in places where Early Richmond fails."

J. C. Plumb—Mr. Wragg, what do you think about Marriana for stock?

M. J. Wragg—I do not see how it can be any better than indigenous stock.

J. C. Plumb—Does'nt the Mariana work much more freely?

A.—It is not my experience that it does.

Wm. Fox—I am not much acquainted with the cherry in this country. I have neglected it for some other things, but I am going to try cherries and pears and I shall succeed.

M. J. Wragg—We are going to get our cherry trees down low so that we do not need step ladders, but we do not prune them.

Wm. Fox—I have seen cherry trees as high as sixteen or twenty feet in the old country, and we trim them high there. If I got an Ostheine cherry I would trim it high.

M. J. Wragg—None of the Ostheins in our country succeeded as well as those I have named. Brussler, Brown and Bessarabian have each heavy foliage, it obstructs the view of the fruit on the tree, while if it was an

Early Richmond if there was only one cherry on the tree you would see it several rods away. I would give Bessarabian and Brussler a space of at least twelve or fourteen feet apart and let them spread right out.

A.—L. Hatch—Can we spray the cherry trees and cure that white mould?

A. We failed this year on account of the wet weather.

A. L.Hatch—It seems to be the same as the fungus on currant and gooseberry bushes and Prof. Goff has good results in spraying for it with Bordeaux mixture. I think, from the observations I have made, that we can control that fungus by good cultivation.

F. C. Edwards—Has the Hawkeye plum any special merit?

M. J. Wragg—It failed to carry the size on Mr. Ferry's ground. It is a large nice plum. The Rockford is a grand good plum; it is not large it is small. I do not think it has any commercial value.

Wm. Fox—How near would you plant your plum trees to get good results?

M. J. Wragg—Ten to twelve feet apart.

Q.—Would you plant all of one kind together?

A.—No, mix them up and and get all the benefit there is in cross fertilization. I know of Miner trees that were a perfect failure until other trees were set in to produce cross fertilization.

Wm. Fox—What are the three best plums you have in Iowa? I want to buy some.

M. J. Wragg—Wolf, Cheney, DeSoto and the Rollingstone is a good plum. I am planting lots of them.

Wm. Fox—The last three I would'nt take as a gift.

Discussion closed.

F. A. Hutchins introduced the following resolutions:

Resolved, that a committee of three be appointed by the president of this society to co operate with the governor in securing and planting in the capital park worthy specimens of all trees native to Wisconsin which, in their judgment, will thrive in that location.

Resolved, that the trees so planted should be provided with plates giving their botanical and common names.

I do not wish to speak especially to this topic; I think it appeals to you all. It is a subject especially worthy of our consideration in this state. I am interested in it from one point of view. You know of the immense interest that has been awakened in Arbor day. If you can co operate with the governor to have this done in the capital park you have a prestige that will be of value to you.

F. A. Hutchins—A gardener ought to be employed to set out the trees in the park. We have'nt over four or five good elm trees that have any business in the park at all. We have planted red elms where they take all the wind and they are stripped of their limbs.

James Currie—I think the trees might be put out and labeled so that they would be educational. This resolution called to my mind the fact of being called by ex-Governor Rusk to see what could be done for the park and in looking it over it struck me that there were too many trees for a small park. Some steps would have to be taken to make room for the newer trees you wish to introduce. I do not believe if you would introduce the best specimens you could they would live in it in its present condition.

Resolution adopted and Prof. Goff, B. S. Hoxie, James Currie appointed as a committee to co-operate with the governor.

SOME HARDY SHRUBS.

JAMES CURRIE, Milwaukee.

The subject I have chosen for this paper is one I have been very much interested in for some years past, and very naturally was among the first to suggest itself to my mind on receiving Mr. Hoxie's kind invitation to prepare a paper for this occasion. However I should hesitate to introduce it here, and ask for it your consideration, were I not aware of the fact that the introduction and cultivation of ornamental shrubs is now a most important branch in decorative horticulture. Everywhere throughout this broad land, where taste and refinement are backed by means, we see beautiful homes rendered more beautiful by the velvety, well-kept lawns surrounding them, embellished by groups or individual specimens of one or more of the many species and almost innumerable varieties of flowering shrubs, now in cultivation. They are, in fact, to-day, quite indispensable for the ornamentation of the home grounds, the park and the cemetery. In the present instance I will confine my remarks, which must necessarily be brief, to a consideration of a few of the best and most popular deciduous flowering shrubs, and while touching on some of the well known species, common in our section of the country, I propose giving particular attention to kinds of more recent introduction. From the title given my subject I may be expected to speak only of those shrubs which the long lapse of time and many careful experiments, under the most trying and greatly varying circumstances, prove to be ironclad, and proof against all the vicissitudes of our severe climate; such is not exactly my purpose. Experience has taught me that even those shrubs which are generally acknowledged as absolutely hardy occassionally suffer under certain circumstances. To be sure such instances are rare. On the other hand we have a class of shrubs which are usually listed as half-hardy and are popularly so considered, yet among them are several species which in my experience at least I have proved to my satisfaction to be for all practical purposes perfectly hardy in, or in the vicinity of Milwaukee, where I have had the best opportunity of observing them. Of this class of shrubs I shall particularly speak, and also of the various experiments I am making with the several newer kinds. It is now twenty years since I came to Wisconsin and made Milwaukee my home, being then satisfied that it offered special inducements for a young man of my profession. Coming from a country which enjoys a climate so temperate that not only all kinds of deciduous, but all kinds of evergreen shrubs, natives of the temperate zones, are cultivated to perfection with the utmost ease, and having become very familiar with them and very fond of them, I was naturally very much disappointed to find so few of them in my new home. The first few winters were very severe, and I was easily led to believe the assertions of my acquaintances that the list of plants, trees and shrubs capable of cultivation in such a climate was necessarily very limited. But as time rolled on and I was occassionally afforded the opportunity of observing what was being done in arboriculture in other parts of the country, I got a gleam of hope that much more might be done in Wisconsin than was then attempted. At any rate I resolved to make the experiments as opportunities offered. To be brief, in many cases the results have been most satisfactory, and I am greatly encouraged to continue making these experiments, and shall from time to time introduce other shrubs either wholly or comparatively unknown in the northwest.

In enumerating the various shrubs I have tried and can recommend as adapted to our climate, I cannot omit for the information of all, those old-time favorites with which most of us have become very familiar, but I shall simply name them, and pass on to a fuller consideration of those less common. Our old favorites, every one so good that were we only able to accommodate one, we should find it hard to make a selection, are the white, purple and Persian Lilacs, Syringa, Upright Honeysuckle, Weigela rosea, Barberry, Snowball, Almond, pink and white Spiraea prunifolia, fringe or smoke tree, Deutzia gracilis and Japan Quince. These will never be discarded but shall occupy a foremost place among their brethren always. Among those to be considered are several species and varieties of genera already named, and taking them up in alphabetical order, I wish first to direct attention to one not uncommon now but so worthy of cultivation that I take this opportunity of giving it my hearty endorsement, I refer to the purple-leaved Barberry, Berberis vulgaris purpurea. The foliage is beautiful violet purple, which contrasts very strikingly but pleasingly with many other of our colored-leaved shrubs. The habit of the plant is compact but not stiff. It usually attains a height of about four feet. In groups this shrub is very effective. Celethra alnifolia or sweet pepper bush is a very pretty and interesting shrub. The habit of the plant is upright and dense, foliage dark green. The flowers which are creamy white and very fragrant, are produced in erect spikes; August is its blooming season, a desirable feature, as most of the shrubs bloom early in the summer.

Cornus or dogwood, a genus of very useful and handsome shrubs, suitable for grouping or as single specimens. Cornus sanguinea, or red branched Dogwood is a most effective species, either when in full leaf in summer or in winter when its handsome red branches show off to advantage. It grows rapidly, but submits gracefully to the pruning shears. It blooms in June, the flowers being white. Cornus circinati is a specie with round leaves, downy underneath, produces an abundance of small white flowers in flat trusses. Its blooming season is June and July.

Cornus mascula variegata is a strikingly handsome variegated shrub, very effective in contrast with such shrubs as purple Barberry. The leaves are light green variegated with white. Forsythia or Golden Bell well merits the praise bestowed on it. Fortunii is the only species I have grown, and is the one so extensively grown around New York and New Jersey, where I saw it when in full bloom last May At first I was disposed to think from its habit of producing a late wood growth that it would not prove hardy enough for our climate. I have, however, been very agreeably disappointed in it. It has never yet been injured in winter and blooms most profusely every summer. The growth of the plant is bushy and upright. The flowers are open, bell shaped, and are a clear, bright yellow in color. To keep it within bounds the knife should be used freely. Halesia tetraptera, or Snowdrop Tree, also called the Silver Bell, I introduce here, not to recommend it as a perfectly hardy shrub, but so desirable that it is worthy of cultivation, and if given a somewhat sheltered nook will succeed well. It is a large, strong growing shrub, producing pure white, bell-shaped blossoms in May. In passing I will merely mention the Hibiscus (Althaea, or rose of the Sharon family). All the varieties are very beautiful, but require protection in winter. I have left some of them unprotected this winter for the first time in several years, and am naturally anxious for the result. Hydrangea paniculata grandiflora is already so well known that any description is unnecessary. So rapidly has it advanced in popularity that it has in the very short time since its introduction become, perhaps, the best known flowering shrub in cultivation. It is quite hardy, and is one of those plants which may be safely left to take entire care of itself, and ultimately become a very handsome specimen. However, a little care will invariably be well repaid by the greater abundance and increased size of its great trusses of flowers. It is one of those shrubs which annually flower on the young wood or growth of the season. From the buds on the previous season's growth the young wood grows which is to bear the blossoms. By judicious pruning the stronger buds near the base of the one-year old branches will start instead of the smaller and weaker ones near the points if left alone. The result is a stronger branch and a larger and better quality of flower truss. This shrub should be in every collection.

Lonicera Fragrantissima, a specia of the upright honey-suckles, having almost evergreen foliage and flowers of delicious sweetness, Lonicera Ledbouri similar to the common Tartarian in general appearance excepting its flowers, which are red; Lonicera Strandishii, a very early flowering one.

Flowers very fragrant and creamy white. Lonicera Tartarica, and its variety Tartarica Alha, the well known old favorites, the former having pink flowers and the latter white Philadelphus Syringa or Mock orange is one of the most popular and useful shrubs known. The varieties are numerous. Those I have grown are Coronarius, flowers pure white, very fragrant; Gordonianus, a robust and profused bloomer, flowers white. Gradiflours a large flowered variety, slightly fragrant. Prunus pissardi or purple leaved plum, is a very handsome shrub, one of the most striking objects one can conceive among trees or shrubs. The leaves when young are almost crimson, and gradually change to a dark purple, which tint they retain until late in the fall when they fall off. If allowed to grow at will, this plant will attain the height of a small tree, but it can easily be kept in bush, form and height by a little annual pruning. It produces early in summer an abundance of small, white blossoms. Rhus glabra lacinata, the cut leaved Sumack is a very desirable shrub. The leaves are large and very deeply and finely cut so that they resemble fern fronds. During summer they are dark green above and glaucous green below, but towards fall they change to a beautiful glowing red. Sambucus Aurea, or golden elder, is a very showy shrub, particularly suitable where a large spreading bush is wanted. The golden yellow hue of its foliage render it very attractive. Another variety, Variegata, having foliage variegated with yellow and white, is also very useful. The Spireas or Meadow Sweet, form an extensive family of most useful and beautiful shrubs. Those I have tried and can recommend are ariae-folio, flowers greenish white; Billardi, rose colored; Callosa, flowers in large penicles rose colored; Callosa alba, flowers white, a most profuse bloomer; Fontenaysii, flowers in large penicles, greenish white, a free bloomer; Opuli folia, a very large robust and compact grower, blooms in great profusion in mid-summer, flowers greenish white; Opulifolia Aurea, a variety having golden foliage of robust habit, very desirable; Prunifolia floreplena, a very common variety now but none the less desirable, flowers double, pure white and very abundantly produced; Thunbergii, a very delicate and graceful looking variety of dwarf habit, blooms early in the spring, producing its small white flowers in great abundance; Van Houttii is considered by many growers the very best variety in cultivation. It is certainly very handsome, producing most profusely its large trusses of pure white blossoms.

Symphoricarpus racemosus or snowberry is a singularly interesting shrub of medium growth, producing freely its small, pink blossoms, which are succeeded by berries about the size of small marbles which hang nearly all winter. They are snow white, hence the popular name of the plant. Syringa or Lilac, a genus of beautiful shrubs so well known that any mention of them may seem superfluous. But it is not of the old favorites I would speak, but of several exceedingly beautiful new sorts recently introduced. I have not grown them myself, but I am assured on good authority that they are all perfectly hardy and assuredly great acquisitions.

I shall try some of them this season. Viburnum lantana, rugosum and plicatum are three very pretty species of the better known Snowball; all are quite hardy and very desirable. Weigela, or as it is now sometimes called, Diervilla, is a handsome shrub resembling in general characteristics its well known relative, rosea, only that its blossoms instead of being rose colored are pure white. Rosea foliis variegatis and rosea alba marginata are two variegated leaved varieties, very useful for arranging with other shrubs either singly or in clumps, and are very effective. They are quite as hardy as rosea, and produce flowers similar to those of that species. I might venture to add to the foregoing other shrubs I have under trial, such as Forsythia, veridissima, Clethra fruticosa, or wild indigo; Kèrria japponica, Rhodotypus Kerrioides, Deutzia scabra, Hypericum Kalmianum, all of them apparently doing well and promising to fulfill expectations. They are all desirable, and I trust may ultimately be found hardy enough to be classed among shrubs adapted to our climate. On some future occasion I may have something to say about those and others. I shall make a trial of, being persuaded there must be many more possessing the necessary robustness of constitution to battle successfully with our severe climate if only we could pick them out. Trial alone can determine that. I would therefore urge upon all interested in this branch of horticulture who are not already in pursuit of this knowledge experimently, to begin at once and let us see what may be accomplished in this direction. Those of you familiar with the plants named will observe that none are really new. None are of very recent introduction, but when I refer to them as new I mean in the sense that they are new to us. There are, however, many shrubs actually new being introduced almost every year. Syme may be of no use to us, but many may be valuable acquisitions. Since the cost is generally trifling, and the pleasure that may be derived perhaps considerable, let us also include a few of them among the older kinds we add to our collection, and time and perseverance may truly work wonders and prove the truth of the old adage which says, "If at first you don't succeed, try, try again." Be not discouraged if at first a plant seems unable to stand the test, a little nursing until it is acclimated may accomplish the desired end and the reward be worth all the trouble. On these lines I am working.

Having a desire to say a few words about the general use of shrubs, I trust I may not overtax your patience while taking advantage of the opportunity offered. The uses of shrubs are manifold, and are even yet only beginning to be appreciated by us. For instance, we may want a screen to give us some little privacy on our lawn. A cedar or other similar hedge is too stiff and formal to our liking, and may in fact be impracticable because perhaps of the shade of tall overhanging trees; we are at a loss what to do, and have in fact already concluded that we must be content with the existing condition of affairs. But an idea is suggested to us and we plant an irregular row of what we are advised are suitable flowering shrubs. The result exceeds our most sanguine hopes, we are simply charmed. Our object has been attained, nay more than that, our screen is not merely effective, it is free from all formality in form and general appearance, is easily cared for, no blanks occur, and even if they do, there will be no hole through the screen, because of the way the plants are set, and having fortunately planted a variety of shrubs, all of them producing flowers in their season, we have one or more varieties in bloom from May till well along in summer, producing a most enjoyable and charming effect, a source of great pleasure to ourselves and our neighbors. In a simillar way we may construct a low, compact windbreak or a dividing line and screen between the vegetable garden and lawn, or we may hide from view some out-building or objectionable yet indispensable object, and we can do all this and often to better advantage with flowering shrubs than with any other growing screen. One of the most effective and most beautiful hedges I have ever seen is one of Tartarian Honeysuckle growing near the entranc to Forest Home Cemetery. The plants have had absolutely no care for several years, but have been allowed to grow at pleasure until now they have attained a height of about twelve feet. The lower branches bend down gracefully to the ground, and the upper ones have so arranged themselves that the general outline is that of a rounding cone yet perfectly free from all stiffness, and so compact is the growth that it is simply impossible to see through it in summer when clothed with foliage, and even in winter, although devoid of leaves, one can see through it very imperfectly. In its flowering season the effect of its great abundance of little pinkish blossoms is truly charming. Sometimes where a screen is wanted and because of lack of room a single row of shrubs only can be planted, which is really a hedge. For that purpose the Tartarian Honeysuckle is especially very valuable; Weigela Rosea is also very good. Both of these plants may be pruned at will to keep them within any desired bounds.

Viewed artistically only, flowering shrubs are also of inestimable value. In the hands of the landscape gardener or planter of requisite taste they become ornaments in the embellishment of the park or private lawn, which may be seen at a glance are indispensable so give the proper finish to the picture. On large lawns, but particularly in the park or in these portions of cemeteries set apart for ornamentation only, they may be arranged to the best advantage. There the grouping of several varieties in large or small clumps or individual specimens, according to the requirements of the location is admissible. The color of the flower and foliage, the height and general characteristics of the plants, the times of flowering, can be considered and the proper place given to each group or individual as judgment and taste dictate, all being so arranged as to constitute one harmonious whole. But even on very small lawns they can be used to advantage. In the vicinity of the house and in locations where trees are desirable, but so as not to obstruct the view, perhaps only those of very low growth can be used, there shrubs are especially valuable. Under tall, bare stemmed trees the grass does not grow, the ground is bare and unsightly, the situation admits of a group of thick foliage. There certain kinds of shrubs are at home, and the spot is soon a very attractive feature in the landscape. In this connection just a word about the planting of shrubs for effect. This forms a special study in itself, and is really as yet very little understood. Many, in fact nearly all kinds, of flowering shrubs, if planted singly and given plenty of room to thoroughly develop themselves make very handsome specimens, and under certain circumstances they must be so grown. But the single specimen does not always answer the purpose or produce the proper effect. A certain location demands a mass of foliage and flower, and it must be low but spreading. A number of shrubs are more or less closely grouped together and the problem is solved. Masses of color in contrast are wanted, dotted here and there among the taller trees and in nooks and corners. Shrubs having colored foliage in various tints according to species are at command, and the desired effect is obtained.

I am constrained, however, to raise a warning cry against the indiscriminate and prodigal planting of shrubs. The smallest place may admit of one, but that may be enough. We cannot commend flowering shrubs too highly, but the old adage, enough is as good as a feast, is particularly applicable in the planting of shrubs and should be kept in view. One hint more in the grouping of shrubs. Presuming such an effect desirable, arrange together species or varieties of varied colored foliage in one group, blending the colors tastefully, and a very striking effect is produced. For instance, Cornus mascula, Spirea opulifolia aurea and Barberris purpurea may be very pleasingly arranged in various combinations. Yet another hint. We are all anxious for immediate effect, therefore plant closely and thin out as growth progresses. A very little additional expense in the original outlay will make a wonderful difference in the effect produced. I cannot close without referring to almost flagrant abuse of flowering shrubs I occasionally see. To me it seems scarcely less heinous than willful murder. I refer to the too common mode practiced in pruning shrubs. To keep flowering shrubs in proper bounds it often becomes necessary to apply the knife, but that is no excuse for using the hedge shears and clipping the branches off with such evenness and percision that the subject when finished has the appearance of a perfect ball or cone. When pruning is done see that the shrub still preserves its perfect and natural looseness and grace of form, which with care and judgment may easily be done.

J. C. Plumb—Will Deutzia Gracilis stand severe winters without protection?

James Currie—In exposed places it suffers.

M. J. Wragg -Is Viburnium plicatum hardy?

A.—It is perfectly hardy in Milwaukee.

M. J. Wragg—You may take Hydrangea paniculata grandiflora and you can "tie to it" all over the northwest.

ANNUAL ADDRESS.

By M. A. THAYER, President Wisconsin State Horticultural Society.

Members and Friends of the Wisconsin State Horticultural Society:

In a large and successful business it is desirable at stated periods to take an inventory of stock, close accounts and settle all unfinished business, making a statement of resources and liabilities. This statement compared with previous years determines the success or failure of the work, and makes a valuable guide for the future. We meet here to-day as horticulturists to take an account of our knowledge; continue those things which have proven worthy and omit those that give no promise of profit. We meet here to-day to settle the accounts of our experiences, bring the balance down for future use, and if possible determine what progress has been made since our last meeting and what work we may accomplish in the future.

Horticulture in Wisconsin has a range of interest and subjects almost unknown in ordinary business transactions. Each subject in itself almost a science, and all affecting the mental, moral, financial and social welfare of our people.

The following are among the many questions naturally arising for our consideration to day:

Have our orchards improved in quality or quantity, and have we more promising varieties?

Has the garden a wider range or a more general use? Has Arbor Day been more generally observed or greater protection provided for our forests?

Is there a more general cultivation of small fruits and improvement in varieties grown?

Has the love of home been strengthened and its surroundings beautified with fruits and flowers?

Have our public parks been enlarged and more nicely kept; are private lawns and public grounds more in demand by our people?

Have school grounds been planted with flowers and trees, and the love of horticulture grown in the minds of our children?

Is there an increase in our membership, and are local societies multiplying?

What has science and experiment done to protect us from insect pests or fungus diseases?

Have we yet learned that the horticulturist's success depends almost entirely on the production of best goods, true to name, fair counts, good measures, prompt shipments and honest dealing in everything?

In orcharding, while we may not point with pride to the perfect apples of the future, yet we are better understanding those varieties that promise best, and to which we are to look for future success.

We are learning that with certain varieties, in favorable localities we are already meeting with reasonable success.

The growing of small fruits is largely on the increase, both for market and the home garden, and the returns in many cases equal, if not exceed the famous orange groves of Florida and California.

Wisconsin is certainly proving one of the best states in the union for growing large crops of small fruits, and our market is excelled by none. Both on farm and in village, people are beginning to regard the little fruit garden as among the first necessities of a comfortable home, and readily adopt the newer methods of cultivation.

I am pleased to refer to the results of Arbor Day, and the manner in which the children of the state applied for plants distributed by our society last season.

Arbor Day was observed in nearly every village and city in the state, and in 2,408 school districts, 18,393 trees were thus set out in observance of this new and beautiful custom.

The 6,000 strawberry plants offered to the first 1,000 children of the state observing Arbor Day were applied for by 205 teachers, representing 1,393 pupils to whom 8,358 plants were sent with full illustrated instructions for setting and caring for same.

The required reports in October show wonderful interest and success among the pupils, and should stimulate every horticulturist to furnish plants for free distribution, whenever needed by this society.

To encourage this work further it is my pleasure at this time to donate to the Wisconsin State Horticultural Society 30,000 strawberry plants, for the first 5,000 children of the state applying for same, and to be distributed on substantially the same plan as last year.

I am satisfied from the experience of the past season that in no other way can this society do so much real good to horticultural work as by this method of plant distribution, assisted as we are so generously by the State Superintendent of Schools, and his able assistants.

It is with feelings of pride that I refer to the interest manifested by the professors of our state university in the cause of horticulture.

Wisconsin may well be proud of every department of this great university, and especially of the agricultural and horticultural work, leading as it does almost every other state in the Union.

Our legislators will consult the best interests of the whole people by making liberal appropriations for a continuance of the same policy in the future, and thereby provide for needed improvements in this direction.

We are hampered somewhat in our experimental work for want of funds, still our stations already established are doing valuable work, and disseminating useful information among our people.

Those who read our reports may learn that new varieties and high priced novelties introduced from the east and south are usually failures in Wisconsin. That only well tested varieties should be grown, and that plants should be obtained only from responsible growers in our own state.

We should have another $1,000 annually to increase our trial stations and advance horticultural interests in other directions.

I am pleased to note that as a rule nurserymen and fruit growers in Wisconsin have a reputation for growing good stock, true to name. That they give good measure, fair count, and will not recommend varieties that fail to do well in our climate.

Let all dealers adopt this method and raise the standard for fair dealing so high that none but honest horticulturists will dare to do business in Wisconsin.

The State Board of World's Fair Managers have treated us generously, thus far giving us all aid necessary to make our work a success. The preliminary work has been laid out accordingly. Ample space has been granted us both in the horticultural buildings and on the grounds outside. We have good samples of nursery stock and many varieties of small fruits now growing on the grounds, with much more to be added in the spring.

I trust all horticulturists will take advantage of this opportunity to advance their own knowledge in this line, and by so doing advance the general interest of horticulture in the whole state.

The consumption of fruits and flowers is largely on the increase. The production for 1892 has been immense, and prices well sustained.

There was never before so great a demand for horticultural information. Especially is this so among our farmers in institute work.

Many new local societies have been organized in different portions of the state, and the outlook for a larger membership was never so favorable as now. On the whole we have reason to be satisfied with horticultural work in Wisconsin for the year 1892.

The life of a horticulturist is a busy one, yet full of inspiration, thought and reflection.

Its impressions are lasting and the influences are always good.

A little community of horticulturists may be without fame, without ambition, without commerce, without manufacturing, without large buildings or crowded marts of trade.

Without painters, philosophers or poets, without homes of great statesmen or graves of celebrated heroes, yet possessing that which makes one most happy and gives to life its zest, all the necessaries, most of the comforts and many of the luxuries of life.

Air, soft and balmy in summer, dry, clear and crisp in winter.

Water, bubbling up from the eternal rocks below, pure, soft, magnetic and medicinal.

Soils, the richest, the quickest, the best, producing fruits the largest and most luscious, the grains and grasses to perfection.

Business men, safe, conservative, cautious and prosperous.

Professional men that practice what they preach, prescribe what they know and advise what they believe.

Saloons and places of questionable resort, not needed in horticultural communities or quoted in their markets.

Schools of highest grade, with best teachers and brightest pupils.

Churches for all, eloquent divines, sincere worshipers, liberal in thought and faithful in work.

Clubs for old and young, literary, historical, Shakespearian, Chautauquan, social and cooking.

Homes, simple and unadorned, rich and tasteful, owned by occupants, good and true

Women, domestic, social and cultivated, fair as nature can make them, and as good as fair.

Fraternal societies, Workmen, Woodmen, Pythian, masters of the square and compass, or brethren of the three links, whose unwritten language teaches charity, fidelity, truth, and finds in every color a useful lesson in the great moral code that should govern every man.

Such in brief are some of the lessons that may be learned and some of the results that may be attained from the study and practice of horticulture.

REPORT OF THE SECRETARY.

B. S. HOXIE, Evansville

Mr. President and members of the Wisconsin State Horticultural Society—Again we meet in annual convention as a society to review the past and plan for the future. The early spring of 1892 was full of hope and promise to the Wisconsin horticulturist. The very favorable winter had brought plants and trees to a fine condition of great promise of full fruitage, but the great excess of moisture in late May and June is now assigned as the principal cause for an almost entire failure of tree fruits in the southern part of our state, and in some localities with certain varieties of small fruits a very meager crop.

This condition of things did not belong entirely to our own state but the fruit growing states east of us suffered from like causes.

There is however one marked and distinguishing feature of this theory for the great loss of fruit for the year 1892; for it is a noted fact in fruit regions that while some sections or townships were favored with good crops of apples others adjoining were nearly destitute.

In our own state the past year perhaps the counties of Oconto and Door produced the best crops of apples.

The careful study of the causes which produced the results of which I speak is the work of the scientific horticulturist and botanist. Our own Committee of Observation in their report may throw some light on this interesting subject of a wide spread disaster.

It is very gratifying for your secretary to be able to report the great increased interest in horticulture for our state. Four or five years ago horticulture hardly dared to ask a place in the program of the Farmers' Institutes. Now at most every Institute the subject is up for favorable discussion, and at many an entire sesson is devoted to this branch of agriculture.

What I said about needed legislation a year ago is only the more apparent to day. A bill will be presented at this session of the legislature embodying the points touched upon then. To bring this matter in a more concise form and to show to the public and also to bring it before the legislature I invited our able president to read paper at our last summer meeting setting forth our needsand reasons why we ask for increased funds to carry on our work. This paper of President Thayer was published in the *Wisconsin Farmer* and a copy of it sent to the address of every member of our state legislature together with the program of this meeting of our society. In this connection I wish to say that the department of state to which this society is more intimately connected are in full symp thy with our work and progress. The printing commissioners most cheerfully assented to my request for an increased number of pages for our volume. This with the finer type used makes a book of full one-quarter more reading matter than any previous volume ever issued by this society, and though the self constituted critic may find errors in plenty the reporter and the editor have done their work conscientiously and to a degree which has resulted in the commendation "one of the most valuable of all our state reports."

The correspondence of the society has been fully one-third larger than for the year 1891, exclusive of the arge correspondence pertaining to the Columbian Exposition the postage of which is chargeable to that account and does not appear in the expenses of this office.

Owing to the fact of the poor apple crop in a large portion of our state and the condition of our finances it was thought best by the nearly unaminous expression of the Executive Board to dispense with or at least offer only small premiums at this time, and only for single plate varieties. Wheather we were wise in this departure from our usual custom or not, I will say in justification that some of our sister states have withheld premiums altogether evidently thinking that money at this particular juncture in their history could be used in ways to the greater advancement of horticulture.

Considerable space has been left in our program at this meeting to completing the work in our hands for our exhibition at the World's Fair next season. Progress in this direction was reported last evening in documents and verbatim which will be published as a part of the transactions of this society.

In this connection I wish to express my thanks and the thanks of our society for the very hearty co-operation of the Columbian Exposition commissioners of this state and of their support in our efforts to put our exhibition in its best possible condition.

Since our last meeting, death has entered the ranks of our honored life members and this time taken one, who a year ago we entered on our list as one versed in plant life from whom we expected much help in the work of this society; I refer to the late Charles A. Chanter, of Kilbourn City, who met his tragic death in Chicago, Dec. 11, 1892.

I immediately wrote a letter of condolence to Mrs. Chanter and later asked her for data in his life work and history. The facts have been placed in the hands of Mrs. Campbell, with the request that she prepare a suitable sketch in memoriam to be published in our next volume of transactions.

All of which is respectfully submitted,

B. S. HOXIE,
Secretary.

TREASURER'S REPORT.

To the officers and members of the Wisconsin State Horticultural Society —

Your treasurer submits the following report:

Feb. 2, 1892, amount in treasury	$245 58
Feb. 4, 1892, received of state treasurer	500 00
Feb. 9, 1892, received of secretary, membership dues	61 00
June 30, 1892, received of secretary, membership dues	21 00
July 1, 1892, received of state treasurer	500 00
Total from all sources	$1,327 58
Total disbursements	1,087 28
Feb. 8, amount on hand	$240 38

Respectfully submitted,

VIE H. CAMPBELL,
Treasurer.

DISBURSEMENTS.

Voucher No.		
33	Patton, C. G., nursery stock for trial station	$5 00
34	Hirschinger, Chas., premiums, R. R. fare and board bill	17 19
35	Barnes, W. D., expenses as delegate to annual meeting	6 87
36	Johnson, M. B., expenses as delegate to annual meeting	4 87
37	Gale, A. I., expenses as delegate to annual meeting	2 50
38	Gray, Warren, expenses as delegate to annual meeting	3 67
39	Hatch, A. L., expenses of trial station and as delegate to annual meeting	29 00
40	Felch, J. L., expenses as delegate to annual meeting	8 15
41	Tuttle, A. Clark, expenses to annual meeting	1 52
42	Usher, S. W., expenses as delegate to annual meeting	4 17
43	Hatch, C. A., expenses as delegate to annual meeting	2 13
44	Rich, T , expenses as delegate to annual meeting	8 74
45	Springer, Wm. A., expenses to annual meeting	8 40
46	Wakefield, J., expenses as delegate to annual meeting	8 40
47	Chappel, F. H., premiums	12 00
48	Kellogg, Geo. J., premiums	2 00
49	Harden, Fred A., expenses of trial station No. 3	73 40
50	Jewett, Z. K., expenses as delegate to annual meeting	7 38
51	McGowan, T. S., premiums	1 00
52	Hatch, C. A., premiums.	5 50
53	Phillips, A. J., premiums	2 00
54	Wrightman, E., premiums	1 00
55	Smith, A., premiums	1 00
56	Peffer, G. P., premiums	3 00
57	Tuttle, A. G., premiums	2 00
58	Chanter, C. A., expenses as delegate to annual meeting	5 90
59	Kellogg, L G., expenses as delegate to annual meeting.	3 86
60	Fish, J. L., expenses as delegate to annual meeting	5 16
61	Smith, Mrs. J. Montgomery, expenses to annual meeting	3 85
62	Phillips, A. J., expenses as delegate to annual meeting.	4 90
63	Dartt, E. H. S., board as delegate from Minnesota Horticulture Society	5 50
64	Kellogg, Geo. J., expenses as delegate to Illinois State Horticultural Society	7 79
65	Chappel, H. B., work as watchman	5 00
66	Campbell, Mrs. Vie H., expenses and hotel bills for self and members	10 90
67	Campbell, Mrs. Vie H., incidental expenses as treasurer for 1891	5 00
68	Hoxie, B. S., one quarter salary	75 00
69	Hoxie, B. S., board bill for delegates to annual meeting	77 55
70	Thayer, M. A , expenses per bill	15 26
71	Thayer, M. A., expenses for trial station	42 72
72	Hoxie, B. S., current expenses	65 00
73	Campbell, Vie. H., minutes, transcribing and expenses to Madison on committee	36 35
74	Hoxie, B. S , one quarter salary	75 00
75	Abbott, C., expenses as delegate to summer meeting	9 50
76	Order void	
77	Order void	
78	Order void	
79	Order void	
80	Smith, Chester W., expenses to summer meeting	4 50
81	Kellogg, Geo. J., expenses as delegate	5 31
82	Kellogg, Geo. J., premiums	14 75
83	Thayer, M. A., premiums	3 00

84	Schofield, J., expenses as delegate	$3 81
85	Snyder, E., premiums	1 50
86	Hanchett, Geo. and Son, premiums	3 00
87	Mead, V. C., premium	1 00
88	Crosby, P., premium	1 00
89	Loudon, F. W., premium	1 00
90	Toole, Wm., premiums	9 00
91	Order void	
92	Elliott, Arthur, premiums	12 50
93	Wright, J. E., premium	1 00
94	Griggs, R. B., premiums	2 75
95	Grubb, Mrs. S., premiums	8 00
96	Wockler, Arnold, premium	1 00
97	Thayer, M. A., expenses to summer meeting	5 26
98	Herbst, J. L., expenses to summer meeting	4 26
99	Hatch, A. L., expenses to summer meeting	3 00
100	Tilson, Mrs. Ida E., expenses to summer meeting	5 10
101	Hoxie, B. S., expenses and postage	82 00
102	Potter, Carl H., service in plant distribution	10 00
103	Order void	
104	Hoxie, B. S., one quarter salary	75 00
105	Hoxie, B. S., one quarter salary	75 00
1	Order void	
2	Hoxie, B. S., expenses, postage, etc.,	50 00
3	Campbell, Vie H., expenses to summer meeting	5 35
4	Campbell, Vie H., expenses as treasurer for 1892	5 00
5	Campbell, Vie H., reporting and transcribing minutes of summer meeting	10 00
6	Hoxie, B. S., printing, postage and expense account	21 00
		$1,087 28

The reports of secretary and treasurer, with vouchers, were referred to the Finance Committee.

The election of officers was next in order and the following officers were elected for the ensuing year;

M. A. Thayer, President, Sparta.
Charles Hirschinger, Vice-President, Baraboo.
B. S. Hoxie, Secretary, Evansville.
Vie H. Campbell, Treasurer, Evansville.
Carl H. Potter, Corresponding Secretary, Madison.

Additional members of the executive committee: E. J. Schofield, Hanover; Warren Gray, Darlington; Daniel Huntly, Appleton; Daniel Williams, Summit; Franklin Johnson, Baraboo; Prof. E. S. Goff, Madison; W. D. Boynton, Shiocton; J. F. Case, Eau Claire; L. G. Kellogg, Ripon; Will Hanchett, Sparta; W. S. Braddock, Mather.

REPORT OF TRIAL STATIONS

Station No 1, Fred S. Harden, Weyauwega.

The following trees and plants have been received and set for trial:

APPLES.

2 Alden	Wm. Springer
2 Cheawassa Beauty	C. G. Patten
2 Malida	C. G. Patten
2 Manning Red	Wm. Springer
1 Moris	Wm. Springer
2 P. Smith	Wm. Springer
3 Palouse	Geo Rudy
2 No. 2	Jewell Nursery Co
2 No. 28	Jewell Nursery Co

STRAWBERRIES.

Auburn	John Little
Beder Wood	Wisconsin Experiment Station
Barton's Eclipse	G. J. Kellogg & Son
Bessie	Wisconsin Experiment Station
Boynton	M. Crawford
Clever	Wisconsin Experiment Station
Cyclone	Wisconsin Experiment Station
D. & D	M. A. Thayer
Dayton	M. Crawford
*E. P. Roe	M. Crawford
Enhance	Henry Young
Gillispie	John Little
Hewett's Seedling	C. Hewett
Martha	Wisconsin Experiment Station
Middleford	Wisconsin Experiment Station
Mrs. Cleveland	J. M. Edwards & Son
*No. 19	Wisconsin Experiment Station
Park Beauty	Wisconsin Experiment Station
Parker Earl	M. A. Thayer
Pearl	M. A Thayer
Phillips Seedling	W. H. Phillips
Sanders	Wisconsin Experiment Station
Southand	G. H. & J. H. Hale
Standard	M. Crawford
Sundle	G. H. & J. H. Hale

RASPBERRIES.

Hillborn	J. M. Edwards & Son
Seedling	Wm. Springer
Superlative	Elmanger & Barry

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*Dead.

GOOSEBERRIES.

Champion	F. H. Phonix

NOTES ON FRUIT.

APPLES—Yellow Transparent and Repka Malinka are the only varieties that fruited this season. Yellow Transparent is an early apple, season, August.

Repka Malinka is a winter, very small.

STRAWBERRIES.

	Perfect or imperfect.	Date of blooming	Date of first picking.	Size.	Vigor.	Quality.	Productiveness.
Crawford	Per.	June 5	June 20	Large	5	Good	Fairly prolific.
Eauraka	Imp.	June 6	July 5	Large	8	Fair	Fairly prolific.
Gov. Hoard	Per.	May 28	June 25	Large	10	Good	Fairly prolific.
Great Pacific	Imp.	June 1	June 24	Medium	10	Good	Very prolific.
Michel's Early	Per.	May 28	June 21	Medium	10	Fair	Fairly prolific.
Mondonax	....	June 4	June 28	Large	10	Good	Fairly prolific.
Mt. Holoke	... ..	June 1	June 26	Large	10	Good	Fairly prolific.
Priney	Per.	May 29	June 26	Large	10	Good	Fairly prolific.
Shuster's Gem	Per.	May 28	June 24	Large	10	Very good	Fairly prolific
Tippecanoe	Per.	June 2	June 28	Large	8	Fair	Fairly prolific.
Thompson No. 5	Per.	May 27	June 26	Medium	8	Fair	Not prolific.
Thompson No. 7	Imp.	May 28	June 23	Medium	10	Good	Very prolific.
Thompson No. 8	Imp.	May 28	June 26	Medium	5	Fair	Fairly prolific.
Thompson No. 9 or Rio	Per.	May 26	June 20	Medium	8	Good	Fairly prolific.
Thompson No. 11	Imp.	May 27	....	... .	1	....	... .
Viola	Per.	June 6	June 26	Medium	8	Fair	Fairly prolific.
Warfield No. 1 or Sandoval	Imp.	June 3	(Rusted.)		.. ..	....	....
Yale	Per.	June 3	June 30	Large	7	Fair	Fairly prolific.

Of the strawberries, Thompson No. 7, or Warfield is first in productiveness and firmness, the next in order are, Great Pacific, Priney, Gov. Hoard, Schuster's Gem, Crawford, Viola, Tompson No. 9, Michels Early, Eaureka and Tippecanoe.

June 20, rust struck Warfield No. 1, or Sandoval and Great Pacific completely ruining the former.

RASPBERRIES.

Ada—A good bearer, medium size, and hardy. First picking July 25.

Am. Everbearing—Fairly prolific, large firm and hardy. First picking July 20.

Kansas—Hardy, large and good bearers. First picking July 16.

Palmer—Productive, medium size and early. First picking July 12.

Progress—Productive, Medium size and early.

Sprays Early—Small, not much of a bearer. First picking July 16.

Winona—Productive, small and early.

EXPENSES.

Number hours work @ 15c per hour	$16 20
Express, freight, twine and stakes	2 95
Rent, three acres, @ $5.00 each	15 90
Total	$34 15

Respectfully submitted

FRED A. HARDEN.

TRIAL STATION No. 2.

M. A. THAYER, Sparta.

I herewith submit my annual report as to condition of plants on State Experimental Station No. 2, for the year 1892.

The season from spring to fall has been one of almost continuous rain—the ground being constantly saturated has injured many plants, especially on strawberries, rust appearing on varieties never showing it before.

Black Raspberries have been troubled somewhat with the blight and the Ohio has been subjected to the encroachment of the Snorry tree cricket.

Our state orchard is looking exceedingly healthy and I herewith submit a copy of the plot of same.

We have lost during the summer, fall and winter the following trees—two Scotts Winter, both planted this spring, one Russ Rombo, one Wisconsin Spy, one N. W. Greening, one Dryamvega, one Maple, one Simbersk and one Hybrid.

Seedling has the appearance of being near the fire, as if it had been burned, a condition I cannot explain or account for; one Forest is top killed and the two Del. Red Winter seem to have made but little growth in two seasons.

The following trees are all in splendid growing condition and have every appearence of being in first class condition: McMahan, Hoodley, Newells Winter Baraboo, Belle Pepin, Gideon, Judson, Peerless, Okabena, Yellow Transparent, Walworth Pepin, No. 46, Garfield. Long Arcadi, Snow, Windsor Chief, Wolf River.

The Yellow Transparent was the only tree that bore us fruit this the second year's growth and we only allowed four apples to be produced upon one tree.

We shall spray according to your directions the coming season.

Of the Idaho, Gakovka and Bessimianka Pears we have one each still living and in healthy condition.

Of the plums the Orels No. 19 and 20, and Rockford are not yet old enough to bear but are in excellent condition.

The Desoto and Cheney standing side by side at a bearing age on our grounds showed a marked difference in favor of the Desoto, which bore some fruit even the past poor plum season, while the Cheney failed altogether. The Desoto is much more vigorous, being as large at three years of age as Cheney at five.

In the list of Blackberries we see no reason to change the list advised by the State Society, unless it might be to speak more highly of the Ancient Briton than ever. The Thompson's Mammoth Winter kills every season.

Among the Black Raspberries we consider the Palmer and Progress as very promising early varieties, hardy and vigorous, and more productive than the Souhegan.

The Older is very vigorous hardy and productive, but too soft for distant market shippers.

Hilborn is promising but its season is to near the Nemeha to be valuable in our locality.

The Ada we can not consider of value to the Wisconsin growers, as it ripens at the same time with the Nemeha which is far superior to it in every respect.

American Everbearing is as strong if not the strongest looking brush being tested, fairly productive, but too soft for distant shipping.

In our report on Strawberries we shall not speak of the appearance of rust on many of the varieties that have shown it this season as there have been few if any varieties that have been entirely free.

Michel's Early (S.), first to blossom, first to fruit, did not produce great quantities of berries and the season was short, but the record is as favorable as many of the much lauded kinds. We consider it valuable as a fertilizer for Warfield or Cresent.

Sandoval (S.), not as promising this season as last although not to be discarded. The fruit can be picked and shipped with Warfield, which it resembles very much.

Crawford (S.), can report on this with the same words as the Sandoval with the exception of its resemblance to the Warfield. It is not a success this season on our grounds.

Eureka (P.), a vigorous late variety, but bearing no longer than the Warfield; it is not valuable in our location.

Yale (S.), a late variety, fairly vigorous, not productive or valuable

Gt. Pacific (P.), and Lady Rusk (P.) are both wonderful plant makers, but have not proved productive for two seasons.

Viola (S.), medium in season, large berries but few of them.

Tippicanoe (S.), medium in season, not a producer.

Thompsons No. 9 (Rio.) (S.), is the most promising variety of the Thompsons seedlings, it is a large finely colored berry and firm.

Gov. Hoard (S.), this is another promising staminate being a plan producer and firm and good color.

Parry (P.), medium vigorous but not productive in berries.

Schuster Jem (P.), gives promise of being valuale as a plant maker and producer of berries.

Parker Earle (S.); this is one of the most valuable of the new varieties, beautiful in foliage and great in productiveness, a very heavy root; stands drouth well, not a great plant maker.

Van Deman (S.); this is one of our most promising new sorts, it is a strong grower and produces a fair crop of beautiful, dark red firm berries, which can be shipped with Warfields.

The Swindle and E. P. Roe have both proved swindles as far as plants received by us are concerned; no Swindles are living and only two E. P. Roes.

Beder Wood (S.) very promising.

The Park Beauty (P.), Dayton (P.), Beverly (S.), Standard (P.), Boynton (P), Oliver (S.), Bessie, Auburn are all what we could ask for first season's report, in growth and foliage.

Gillespie (S.), we allowed to bear a few berries on one plant to note the shape, which is the exact counterpart of the Haverland although a different sex; it is also a good plant producer.

Enhance (S.), and Sanders (S.) very promising.

Bartons Eclipse (P.); this plant went into winter quarers in fine condition.

TRIAL STATION No. 3.

A. L. HATCH, Ithaca.

List of trees and plants etc.

3	Palouse Apple, one year, from Geo. Rendy, Colfax, Wash.
5	Champion Goosbeeries, F. K. Phonix & Son, Delavan, Wis.
3	Superlative Raspberry, Ellwanger & Barry, Rochester, N. Y.
6	Hillborn Raspberry, J. M. Edwards & Son, Ft. Atkinson, Wis.
2	Older Raspberry, Geo. J. Kellogg, Janesville, Wis.
13	Gillespie Strawberry, John Little, Granton, Ont.
12	Auburn Strawberry, John Little, Granton, Ont.
8	Phillips Seedling Strawberry, W. H. Phillips, Stanton, Ind.
9	Swindle Strawberry, G. H. & J. H. Hale, South Glastonburg, Conn.
10	Southard Strawberry, G. H. & J. H. Hale, South Glastonburg, Conn.
12	Beder Wood Strawberry, Coe & Converse, Ft. Atkinson, Wis.
15	Park Beauty Strawberry, Coe & Converse, Ft. Atkinson, Wis.
21	Enhance Strawberry, Henry Young, Ada, Ohio.
12	Mrs. Cleveland Strawberry, J. M. Edwards & Son, Ft Atkinson, Wis.
7	Beverley Strawberry, Matthew Crawford, Cuyahoga Falls, Ohio.
6	Dayton Strawberry, Matthew Crawford, Cuyahoga Falls, Ohio.
6	Standard Strawberry, Matthew Crawford, Cuyahoga Falls, Ohio.
6	Boynton Strawberry, Matthew Crawford, Cuyahoga Falls, Ohio.
6	Boynton Strawberry, Geo. J. Kellogg & Son, Janesville, Wis.
7	Bessie Strawberry, E. S. Goff, Madison, Wis.
8	Cyclone Strawberry, E. S. Goff, Madison, Wis
10	Oliver Strawberry, E. S. Goff, Madison, Wis.
10	Middlefield Strawberry, E. S. Goff, Madison, Wis.
7	Saunders Strawberry, E. S. Goff, Madison, Wis.
8	Martha Strawberry, E. S. Goff, Madison, Wis.
12	Michel's E. Strawberry, E. S. Goff, Madison, Wis.
8	Mrs. Cleveland Strawberry, Geo. J. Kellogg & Son, Janesville, Wis.
6	Enhance Strawberry, Geo. J. Kellogg & Son, Janesville, Wis.
6	Barton's Eclipse Strawberry, Geo. J. Kellogg & Son, Janesville Wis.
99	Lady Rusk, Wm. Stahl, Quincy, Ill.
13	Seedling Strawberry, John Kuick, Fond du Lac Wis., via. Clark Hewitt of Waupun, Wis.
20	Progress Raspberry, grown here last year.
7	Winona Raspberry, grown here last year.
6	Palmer Raspberry, grown here last year.
6	Spy's E. Raspberry, Coe & Converse, Ft. Atkinson, Wis.
22	Small trees from nursery row of 1890, reset into orchard.

2 Matilda Apple-trees from Chas. G. Patten, Charles City, Iowa.
2 Thompson's Seedling Apple No. 46, Jewell Nursery Co. Lake City, Minn.

CALENDAR AND FIELD NOTES.

April 1st, Pruned orchard; past winter quite mild; all trees uninjured by cold. Some small trees hurt by "tree-hoppers."

April 20th, uncovered raspberry bushes that were buried. All bushes both protected and unprotected not hurt by winter.

April 26th, plowing, planting and replanting.

May 20th, rained almost every day for last three weeks. Snow covered roof of barn on west side this morning.

May 30th, apples in bloom.

June 11th, rained three inches this week. Trees out of bloom; native plum bloom all destroyed by rains and cold. Three-fourths cherry bloom rotted. Apple bloom badly hurt, many kinds nearly all gone—i. e. the flowers and forming fruit are killed. Almost ten inches rain here in May.

June 15th, seven-eighths inches rain on 13th. Apple foliage badly diseased.

June 16th, two and a half inches of rain last night and yesterday forenoon.

June 30th, first ripe strawberries. Cold wave.

July 7th, clear weather.

October 23d, first killing frost. Picked last of grapes, about 500 pounds to-day; just ripe.

November 17th, first snow, six inches, ground not frozen.

All living plants and trees have made a good reviving growth during the last season, except some of the Russian cherries transplanted which appea very much like dwarfs indeed.

Two trees of Yellow Transparent apple set in 1890, bore sixteen fine apples. One of the Scott's Winter bore two apples which are shown herewith. Should the next season prove favorable we may expect several kinds of fruit in the orchard.

Of raspberries fruited the Muskingham impressed me quite unfavorably. The fruit is large, purple with bloom, irregular in color, very sour and unattractive Blight was very severe, especially on Ohio Black Caps and few sorts showed fruits of any marked excellence. Even Red raspberries suffered severely with this disease and no reliable results were obtained from the earlier sorts.

The Japanese Wineberry fruited fully and being very late for a fruit of that class escaped the blight. For practical use however this variety can not lay claim to any value. As a novelty it is perhaps a success. The fruit is too small and acid to be a profitable fruit and coming as it does at the close of the raspberry season would not be appreciated as it would if a month or so earlier. A bush or two as a novelty to produce berries at the close of the raspberry season may entitle it to a place in some gardens. The berry is small for a raspberry, brilliant scarlet, quite sour with a faint cherry like flavor which becomes a little more plain when cooked. The bush is very handsomely covered with reddish spines and somewhat resembles a moss rose bush. The berries are enclosed in moss covered sepals until about ripe and these fruit clusters are very handsome.

Very heavy rainfall during the strawberry season caused a great deal of rust and we had no really good fruit. From notes taken at fruiting time we found Mt. Holyoke rusted almost to death. Sandoval 30 per cent. rust Crawford 15 per cent. Yale 15 per cent. Viola 10 per cent. Eureka 15 per cent. Great Pacific 20 per cent. Warfield 20 per cent. Thompsons No. 5, 20 per cent.

Of those appearing to be too poor for further trial, if we were to judge by this season alone, we mention Eureka, Great Pacific, Mt. Holyoke, Thompson's No. 12, Yale.

Of those promising to be valuable we name Crosby, Crawford, Sandoval. We regret being unable to report so little from the small fruit trials, but hope next season will be more favorable as we have plenty of plants of almost every kind on trial. Respectfully submitted,

A. L. HATCH,
Ithaca, Wis.

To Prof. E. S. Goff, Madison, Wis.

January 30, 1893.

Wisconsin Horticultural Society in account with A. L. Hatch for care of Hill Crest Experiment Station for the year 1892:

Express and freight	$2.25
Manual labor and team	13.30
Postage and stationery	25
Rent of land 1¼ acre	8.75
Total	$24.55

Report of managers of trial stations adopted.

DISCUSSION.

President—The Haviland is a good pistillate variety. I would prefer it for my own use.

R. J. Coe—I do not think I ought to make any report on Beder Wood only so far as the plant is concerned

W. A. Bernap—The Beder Wood was highly recommended as a stammate, so much so that some people are setting it alone.

E. J. Wood—I am using it altogether as a fertilizer. It continues in bloom three or four weeks.

C. E. Tobey—We have yet to find a berry that we pick twice before the Warfield. When we ship we ship Warfield as early as any.

Prof. Goff—When shall we declare a variety as sufficiently tested?

President—That is for you to say. The Japanese wine berry killed down to the ground and we did not report it this year.

A. L. Hatch—The Japanese wine berry that I grow with protection is worth a place if it does as well elsewhere as with me.

M. A. Thayer—With us it did not do well. It is a beautiful shrub, but it kills down to the ground. Some of them we have moved down to a heavier soil that will come into fruiting this year.

Prof. Goff—With reference to the E. P. Roe variety it failed with me.

E. J. Shofield—That has been my experience with the E. P. Roe.

C. E. Tobey—I should consider that the report on strawberries this year must be viewed in a great many lights; varieties that have never troubled us before have given us trouble this year and I do not think we should discard anything that is valuable because of the results of this year's trial.

Prof. J. E. Coleman—Which two varieties would you set?

A. L. Hatch—Perfect formed plants of Sandoval and Michel.

Daniel Huntley—I got Sandoval of Mr. Warfield himself and I know they are true to name. I set them twice as thick as any other variety and there is not enough to amount to anything.

Prof. Goff—If we get one variety of value, from this list we set in 1890, it is all we can reasonably expect. The main purpose of these trial stations is for the larger fruits. There is no reason that I know of for enlarging these stations. There is no use of running these varieties more than three or four years and in that way we can keep within bounds.

President—One great advantage of the trial stations is that they save our people a great many dollars by the experiments made there; the reports of the stations will be read and people will profit by them.

Prof. Goff—The Van Deman did not do as well this year as the preceding year. I noticed this fact, that the same day I marked Warfield ripe I also marked Van Deman ripe with this difference—Warfield had a quart or two of berries and Van Deman only a few. The Van Deman ripens up well.

Will Hanchett—The reports on the shipping qualities of the Van Deman are very good. No berry yielded as good this year as on previous years; the Warfield only yielded about one-fourth as much as previous years.

RAISING APPLES ON SANDY SOIL.

W. J. **BENDIXEN**, Waupaca.

No doubt a northeast slope with a boulder clay soil is the best place to plant an apple orchard, but we cannot all get that kind of location or soil to plant on, and although Waupaca county is fast coming to the front as an apple raising locality, there are a great many people who would like to raise apples who have neither the above kind of location or soil, and who ask, are we to go without apples or buy them; to such I would say, if you have clay gravel sub soil (and that is the sub soil under nearly all the sandy land in the vicinity of Waupaca) then you can raise apples on the sand by planting hardy varieties and keeping up the fertility and moisture of the soil.

I have a most unfavorable site for an orchard but I have seen fine trees and good apples grown on the same kind of land, and in fact know of some good orchards that have been in bearing to my knowledge for the last ten to fifteen years; for that reason I have set out about seventy-five apple and crab trees (within the last two years) and they are doing well.

My method is to prepare the soil by manuring heavy and then plow deep; I plow twice in the same furrow, and in that way I get down 14 to 16 inches; then I plant carefully, and after planting I endeavor to keep up the fertility and moistureof the soil by mulching heavy on the frost in the fall to keep them back in the spring and then give them general good care, and in that way I believe I shall get apples.

As to varieties I would recommend Tetofsky, Dutchess, Wealthy, Yellow Transparant, in the order named for apples, and Transcendant, Whitney, Hyslop, and perhaps some sweet crab for sweet crabs.

FARMERS VS. TREE-SELLERS.

W. A. **BERNAP**, Iowa.

Mr. President, Ladies and Gentlemen:—

These papers were first filed and the cause and common in the Horticultural Society of the Northern District of Iowa and I now present them here on proper change of venue taken in the case:

In presenting this great case for your consideration, I feel that I can do so without prejudice, because at the present time I am neither a farmer or a tree-seller, while at different times in my past I have been both farmer and nurseryman, but have now fallen to the humbler position of clerk of the courts. The cause is one of great importance I shall try to present it candidly and I crave your careful adjudciation.

In opening I present and read the petition of the plaintiffs filed in the case which is as follows:

FARMERS
vs. } Petition in Equity.
TREE-SELLERS.

Now come the plaintiffs and for cause of action state:

PAR. 1. That they are lawful citizens of the said Northern District of Iowa, good men and true, who own each his own farm and who as they of right should, desire to improve and beautify the same.

PAR. 2. That for the purpose of so beautifying and improving said farms, they have at various times and sundry places purchased of defendants large numbers of trees, shrubs, flowers, vines and other plants.

PAR. 3. That in payment therefor they have given the said defendants, large sums of money and large amounts of goods, wares and merchandise.

PAR. 4. That when so purchasing and paying, plaintiffs believed and it was so represented to them by defendants, that said trees, shrubs, flowers, vines and other plants, were when delivered, in good growing condition, true to name and of varieties suitable to this said Northern District.

PAR. 5. That said trees, vines, flowers and other plants were not when delivered to plaintiff, in good growing condition, were not true to name and were not of varieties suitable to the Northern District of Iowa. and that defendant so knew they were not when they sold and delivered them to plaintiff.

Wherefor, plaintiffs pray for judgment against the defendants, that they may be compelled to place upon the plaintiff's farms, the orchards, gardens and vineyards promised and for costs of this action, and for such other and further relief as the society may deem just and equitable in the premises.

So reads the petition, and I fear that in a large majority of cases the allegations therein contained, are only too true, and it rests with us to decide upon whom the blame lies.

To the above petition there were two separate answers filed. One by the local nurserymen of the district, and one by the itinerate tree-peddlers who had worked therein.

The answer made and filed by the local nurserymen is as follows:

In the Horticultural Society of Iowa in and for the Northern District, December, 1892.

FARMERS
vs. } Answer of Local Nurserymen.
TREE SELLERS.

Now come the local nurserymen of said district and for separate answer:

Admit of plaintiff's petition, Par. 1, that they reside in the district; Par. 2, that they bought the stock; Par. 3, that they paid for it, and Par. 4, that it was recommended as stated, but deny Par. 5, that said stock was not as represented.

And defendant for further answer states:

1. That they have at all times to the best of their knowledge and ability delivered stock in good growing condition, true to name and of varieties suitable to the district.

2. That when they by mistake have failed to do so, they have rectified their mistakes to the best of their ability.

3. That at great loss to themselves, sometimes when financial ruin seemed just at hand, they have destroyed whole blocks of poor or tender trees rather than deliver them to their customers.

And said defendants, local nurserymen, for further answer and counter claim state:

That plaintiffs by false representations and promises led the said defendants to believe that they would purchase stock of said local dealers and induced the defendants to set large nurseries, but, that when said stock was grown, in good order, prime condition and ready to deliver, the plaintiffs wholly or in part disregarded their representations and promises and purchased worthless and inferior stock of itinerant tree peddlers at exorbitant prices, whereby the said defendants' stock was left on their hands unsold and they greatly damaged thereby.

Wherefore defendants, the local nurserymen, pray for judgment against the plaintiffs, that they may be compelled to buy their stock at home, and that they, the local nurserymen, be protected against itinerant and irresponsible tree peddlers.

The equities of these defendants appear quite as just as those of the plaintiff and the case seems to develop the fact that both farmer and local nurserymen are victims of the same transgressor.

The other answer made and filed by the itinerant tree peddlers is as follows:

In the Horticultural Society of Iowa in and for the Northern District, December session, 1892.

FARMERS
VS. } Answer of Itinerant Tree Peddlers.
TREE SELLERS.

Come now the itinerant tree peddlers and for separate answer to plaintiff's petition: Admits all of said plaintiff's petition from beginning to end, but states that "*caveat emptor*" (let the purchaser beware) is the rule for all purchases of personal property, and if plaintiffs, the farmers, will deal with strangers and get beat, they are in law estopped from entering complaint here or any where else.

The said defendants, itinerant tree peddlers, for further answer state, that they have got their money. That they are outside the jurisdiction of this society. That they are wholly irresponsible, and they don't care a continental what kind of a judgment the society may render against them.

Here I think we smoke the rascals out, here are the fellows that have feathered their own nest; have swindled the farmers and nearly ruined the local nurserymen.

Thus the issues are joined and every party will be able to present abundant evidence to substantiate their pleadings. The farmers can furnish a cloud of witnesses to prove their allegations. The local nurserymen can without doubt prove the truth and sincerity of their answer, while the itinerant tree-peddler simply don't defend but proposes to beat us on the execution.

Thus stands the case for your consideration. The farmers certainly have a grievance, they have year after year been cheated, and lied to, and swindled enough to make one's heart ache.

In my section of the country they have paid enough money to give each one of them large orchards and gardens, but as a rule they have very little and many of them absolutely nothing to show for their expenditures.

They have bought stock warranted to grow that never showed a leaf. Iron clad trees that would be tender in Texas, apple trees that bore crabs, pears that produced apples, plums and cherries of rare beauty and high sounding names that bore worthless seedlings, $2.50 grape vines that were 8 cent Concords, ever blooming roses that bloomed never, and if there is any swindle yet to be played that the farmers have not been victimized by it is one my imagination cannot suggest. At this very time tonguey agents in my own county are getting the signatures of trusting farmers to orders of from one to two hundred dollars each for stock sold at high prices of such varieties that the purchaser would save money, work and much disappointment if they would burn their stock when delivered in place of planting it.

But granting the farmer's petition and all this as being true, does this make out a case for the plaintiffs? Are not the itinerant tree peddlers more than half right in their plea "Caveat Emptor?" If buyers will not use due dilligence in making these purchases as in other transactions should they not be estopped from complaining?

Has the farmer any right to expect success unless he will use the same judgment and care in planting an orchard that he does in planting a field of corn What would be said of a man expecting to raise a field of corn who would buy his seed corn of some traveling peddler at 15 cents a bushel (southern corn at that), would plant it with a seeder three weeks too late in the spring, would tend it with a drag and turn his cattle into it during the summer, and then think to pick a crop of corn in the fall. The verdict would be unanimous that the man was a fool and ought not to have any corn. Yet that is about the way many go about fruit raising (I mean, of course, farmers up my way; I don't suppose for a moment you have any such fellows here). I tell the people of my county that the same care that will raise corn will grow apples and that grapes are more certainly raised than potatoes.

Let us see. I submit that statement to this body of experts to traverse or endorse. How do your farmers go about it to raise corn? First he buys his seed born of some one he knows and in whom he has confidence, pays a good fair price for it, and is very careful in selecting his varieties. Friends, buy your fruit stock the same way, go to your local nursery men and pay them a living price for their stock and get good varieties. Be just as afraid of strange, cheap trees as you are of strange, cheap seed corn. Second, for corn your farmer sees that his ground is thoroughly prepared, then watches the season and plants at the proper time with much intelligent care. That is just what we want you to do with your trees. Third, he cultivates carefully and thoroughly in the season and soon after the fourth of July lays his field by for the year. That is just what your trees want when young.

Fourth, he fences his land carefully, or by careful guarding keeps cattle and all enemies to the crop away from it; so he should from his orchard; apples and beef never were successfully grown from the same trees; and finally having done all these things he will without doubt gather in the fall a bountiful crop of corn and I confidently state that with the same care he will even more certainly in due time harvest from year to year a generous supply of apples. Am I not right?

I have an abiding faith in Northern Iowa as a fruit country. I do not believe our friends of the southern district have all the advantages. There is a natural law of horticultural growth that will help us when we once conclude to intelligently help ourselves. That law is, cereals and fruits attain their highest perfection near the northern line of their successful culture. It is so of wheat, it is so of oats, barley, corn and potatoes, and it is so of fruit. We cannot raise as many varieties of apples as our southern friends, but the varieties we do raise are superior in quality and will outsell theirs of the same variety in the market every time.

The day is coming when this country will be covered with orchards and Northern Iowa apples will be just as standard in the markets of Chicago, St. Louis and Minneapolis as North Dakota wheat now is. I am not a prophet nor the son of a prophet, but I think I can tell when that time will be.

When you learn to shoot the itinerant tree peddler with his big picture book, and patronize home dealers; when you set your orchards in the coldest place on your farm instead of the warmest; when you will study the varieties of your trees half as much as you do the pedigree of your cattle; when you will inquire into the wants and needs and take the same care of your orchards that you do of your corn and hogs, and when you will learn to pay a dollar into this or some other horticultural society and will read and intelligently follow its reports, then and not till then will this district establish and maintain its fruit train lines to Chicago, St. Louis and Minneapolis markets, and take the horticultural position in this country that the Almighty intended it to fill, and that it has been waiting your assistance over 6,000 years to assume.

THE SO-CALLED "SAP" OF TREES AND ITS MOVEMENTS.

By C. R. BARNES, Professor of Botany, University of Wisconsin.

The subject which I have chosen to present to you this evening is not chosen so much on account of the information which I am able to impart as for the purpose of correcting a great deal of mis-information which is widely prevalent. Many false ideas as to the nature and movements of what is popularly known as the "sap" of trees are extant, and in a large number of cases these ideas are founded upon mistaken notions of the physiology of plants. Our own knowledge about many of these matters is yet exceedingly imperfect, and it is for that reason that many of my statements will of necessity be negative. The subject also is one which must have considerable interest for those so intimately engaged in cultivating fruit and shade trees as are the members of this society; and I take it that no fact in regard to the life and mode of working of the plants with which we are so consistently dealing will be entirely without interest.

WHAT IS MEANT BY "SAP?"

It will be necessary for us at the outset to gain some accurate idea if possible of what is meant by the word "sap." If we think for a moment of its various uses, we shall see that it is a word which designates not a fluid of definite composition. but one under which is included a great variety of watery solutions. The sugar maker begins even before the snow has left the ground to collect from wounds in the trunk of the maple trees a sweetish liquid which he calls "sap." After a considerable time the proportion of sugar which this liquid contains diminishes very greatly, and he then abandons his work because, as he says, the "sap" has become too poor. The man who has postponed pruning his grapevines or trees too late in the season finds that from the cut surfaces a watery substance is trickling which he calls "sap." But the sugar maker will be unable to obtain either sugar or syrup from this fluid, which is however, called by the same name as that from which he manufactures his sweets. When a boy who is making a whistle, hammers the bark of the twig in the spring, he finds it easy to separate the bark because, as he says, the surface of the wood is then slippery with "sap." The sap of the boy is widely different from the sap of the pruner and the sap of the sugar maker.

Again: What we do not call sap may furnish us with some illustrations of the diversity of meanings of this term. We do not ordinarily speak of the "sap" of the apple, or of the "sap" of the grape, or of the "sap" of the orange, but call the fluids which these fruits contain "juice." And yet they are not more different in their composition from those fluids which we do call sap than the three examples already mentioned are different from each other. We might, therefore, in all reason apply this word "sap" to the juices of fruits.

We popularly distinguish the older hard internal wood of the tree under the name of "heart wood" from the younger, softer and lighter colored external wood, which we call the "sap wood." To the fluids which saturate the sap wood we are constantly in the habit of applying the word "sap," but I have never heard it applied to the exactly similar fluids which saturate the heart wood. As far as the composition of these fluids is concerned, there is no reason why that in the heart wood should not equally well be designated as sap.

What then are we to understand by the word "sap?" Evidently not a substance of any definite composition; but the word signifies only in the most general way the various watery fluids which are found in the plant. There is no reason indeed why these solutions should not be called water, for in many cases they are almost as pure as the water which we drink. In the chemist's sense, the water which we draw from our wells is a watery solution of various substances, and yet we do not designate it commonly by any other word than simply "water." In a similar manner it is quite proper for us, and perhaps it would conduce to clearness of ideas, to designate the watery solutions in plants simply by the term "water," understanding it in its popular and not in its strictly chemical sense.

MOVEMENTS OF WATER IN TREES.

Let us turn now to the consideration of the movements which the water in trees exhibits. I shall confine my remarks to trees simply for the reason that they present the greatest variety of water movement, and at the same time furnish the greatest difficulties in the explanation of these movements. If therefore we understand the movement of water in trees, we shall be able readily to transfer these ideas to the movement of water in the smaller plants, although the statements applicable to the trees are not always applicable to the smaller plants because of their greater simplicity; however the greater includes the less.

I. THE EVAPORATION STREAM.

In the first place there is need of a very considerable amount of water to supply the constant evaporation which is going on from the leaves of trees. Immense areas of delicate tissues are exposed to the dry air and oftentimes to the hot sun in the form of foliage, and from this foliage there is going off at such times large quantities of water in the form of vapor. The water needed to supply this evaporation must come from the soil, because it is not possible for the leaves to take in any water; not even when they are wet by the rains or by the dews. The water enters, not at the base of the trunk where the large roots are found, but only at the extremeties of the finest rootlets. At these points the rootlets are clothed with a "nap" or "pile" of finehairs. These root hairs must not be confounded with the fine branches of the root, for it is only the finest branches which are covered by the close-set hairs. Consequently it is only the youngest and most delicate parts of the root which allow the entrance of water. But the water escapes from the leaves, and from the point of entrance to the point of exit is a far cry for the coursing droplets. How does it pass through this long space?

It is just here that our knowledge is most defective. We know a number of things that are true in regard to it, and we know a number of things that are not true in regard to it.

THE COURSE OF THE EVAPORATION STREAM.

(1.) We know that it moves in the sap wood of the tree, and neither in the bark or in the heart wood. Many of you must have made observations which are sufficient to establish this point. You have, for instance, observed that the bark of trees might be peeled off for a considerable distance, and that the leaves would still retain their green color and their freshness. In many cases indeed the mere removal of the bark from the tree is not sufficient to bring about its death until several months, and in some trees not until several years, after the injury. Death, however, is inevitable sooner or later; but the fact that the leaves remain fresh for so long a time is evidence that the supply of water is not interfered with. Death ensues from a totally different cause, namely, from the starvation of the roots in a way which will be explained later.

Again: You must have observed that it is quite possible to have the entire heart wood of the tree removed, as is often done by decay, and yet to have the leaves remain fresh and green f r an indefinite time. In fact, the rotting out of the heart wood scarcely interferes with the vitality of the tree, except as it renders it mechanically weaker, and consequently more liable to be overthrown by storms. If any further proof were needed, it is perfectly possible to show experimentally that the sap wood alone is engaged in the transfer of the water required for evaporation by cutting into it. A saw cut which passes through the sap wood, but leaves the heart wood intact, brings about within a very short time the withering of the leaves. In some trees, indeed, a cut which severs only the outer youngest layers of the sap wood will produce the same effect, since in such trees only the youngest layers of the wood carry the water. By experiments on twigs it can be demonstrated that withering will occur even if the bark is almost completely uninjured.

(2.) We know the water to supply evaporation moves chiefly in the cavities of the elements of the wood. The wood of the tree is composed of a large number of *fibers*, that is, enlongated cells pointed at both ends, and of *ducts*, that is, tubes of great length formed by the breaking together of rows of cells placed end to end. You can get an idea of the manner in which these ducts are formed by imagining a series of round pasteboard boxes piled one on top of another, after which the bottom and top of each is removed, so that, instead of a series of separate chambers, we have now a long tube. The fibers may be likened to a series of lead pencils, sharpened at each end and placed in contact with each other, the points of the lower ones overlapping the next ones above and fitting in between them. In my illustration the cavity of the fiber would be represented by the lead, and it would be more accurate if we could conceive of the cavity as not extending entirely through the pencil, but stopping short of the point. Minute pits extend from the cavity of one of these fibers to the other, and the walls also of the long ducts are marked by larger thin spots. It is in the cavities of these ducts and fibers that the water chiefly travels.

We do not know what part is taken in this ascent of the water by those peculiar elements of the wood, which you know by the name of silver grain or the pith rays. You will remember these as the shining plates of tissue which extend from the center of the wood toward the circumference. They are particularly prominent in the oak, and show most when it is split "with the grain." It is probable that these cells have a great deal to do with the movement of water, but their exact role is not fully agreed upon.

THE LIFTING FORCE.

(3) We are in almost total ignorance at the present time as to the force by which the water is elevated through so mang feet. There are trees in the gullies of Victoria, Australia, whose height exceeds 470 feet, and we must invoke some force which is able to raise water from the level of the soil to the level of the highest leaf. A year ago we thought we had a hypothesis which would account for this movement, but later researches have brought to light some facts which are at present totally irreconcilable with what was a most charming and, at that time, a most satisfactory explanation, and we shall be obliged to abandon it unless the wine of the new knowledge can be held by the old bottles of theory.

Not capillarity.—At the time when our knowledge of capillarity was greatly extended by the celebrated researches of Jamin, it was thought that we had a force adequate to account for the raising of water to these great heights. The fibers and ducts which I have described to you seemed to answer very perfectly the requirements of capillary attraction, and it was thought that this force, by reason of which water rises through narrow spaces, was the one sought. But the rise of water in capillary spaces is proportioned to the size of the opening; the smaller the opening the higher will it rise. With the decrease of the caliber of the tubes, however, the friction increases enormously, and only small quantities will be able to be moved on account of the diminished size of the tubes. It was quickly seen that in order to account for a rise of even a hundred feet the tubes of the wood must be vastly smaller than they really are; whereas, to account for the quantity of water transported they would need to be much larger than theory permitted

Not atmospheric pressure.—When it was found that the air in a plant is under a less pressure than that outside the plant it was thought that the force had been discovered, and that atmospheric pressure furnished the explanation. Negative pressure, however, on the interior never reaches zero, and consequently can never account for a rise of more than thirty-three feet.

Not root pressure—Again: What was called root pressure was invoked to explain the phenomena. It is found that water is absorbed at certain times so rapidly by the roots that it exists in the plant under considerable pressure, and it has been claimed that root pressure, combined with the other forces already known, was adequate to account for the rise of water. But this, too, has failed us.

Not "vitality."—It is perhaps the greatest weakness of the last theory (that of Godlewski), which we have just had to abandon, temporarily at least, that it depended for its explanation upon the indefinite and illusive "vitality" of certain portions of the plant. Godlewski's brilliant hypothesis, which ascribed to the activity of the living cells of the medullary rays the function of receiving from lower levels the water, and passing it on to higher tissues through rhythmic variations in their osmotic power, due possibly to respiratory changes, may yet hold the clue which we are seeking. But when Strasburger jacketed a young tree for a distance of 35 feet, and kept it surrounded by hot water until all of the living cells in the tree were unquestionably killed, and when under these circumstances the water supply to the leaves was not interfered with, so that they remained green and fresh, we were obliged to conclude that the lifting of the water is not dependent upon the life of the tissues directly, but that it is evidently carried on by a physical process yet to be explained.

A COMMON SAYING.

Before passing from this topic of the movement of water which supplies evaporation, I must allude to a very common and widespread idea—at least I judge it to be widespread because it is so frequently propounded by my students—that " the sap goes down in winter and up in the spring. " Just where the sap is supposed to go in the winter is not exactly clear; since if the roots are absorbing water in the fall when the evaporation is diminished, they are likely to have quite as much water as they can hold already. The conception apparently is that all of the water lodged in the trunk and spreading branches goes downward into these roots. It needs however only the most casual examination of trees in winter to discover that at this time they are almost saturated with water. The twigs of the hickory tree, for example, will be frozen on a cold day in winter so that they are as brittle almost as glass, and one can snap off a twig half an inch in diameter as though it were an icicle. The same twig when not frozen on a mild day will be so tough that there is no possibility of breaking it.

Again, if one cuts off a branch from a tree in winter and brings it into a warm room he will quickly discover that water is oozing from the cut end, showing that the twigs are almost saturated with it. As a matter of fact the water in trees increases from midsummer or early fall to the beginning of growth in early spring. There is thus no necessity for any "going up" of the sap in the spring until the leaves are expanded and the water with which the tree is already saturated begins to be evaporated from the foliage.

II. BLEEDING.

A second movement of water in trees is that which occurs in the so-called "bleeding." The bleeding of trees occurs at different times of the year, either before growth has begun at all or just as it is beginning. In the two cases the cause is quite different. We find a good example of both sorts of bleeding in the gathering of the sap by the sugar maker. This gathering begins at the time when the ground is still frozen and the roots are almost or quite unable to absorb any water, but at a time when the air is warmed through the middle of the day by the increased heat of the sun. At first the expulsion of water from wounds made in the trunk is due to the expansion by heat of the air inside the smaller branches and twigs of the tree. This sets up at once a pressure upon the water, and this pressure is transmitted to all parts of the tree. The water with which the tree is filled is thereby forced out as soon as an opening is made for its escape. Later in the season, however, the roots begin their work of absorption, and there is then set up the so-called root pressure, by reason of which the water is forced out at the same openings. The latter sort of bleeding is necessarily delayed until growth is about to begin, and is checked as soon as the foliage is sufficiently expanded to begin evaporation.

A bleeding similar to the last takes place at the hood-like tips of grass leaves, where the skin is nearly always ruptured. The little drops of water which accumulate here are commonly mistaken for dew, but are merely droplets exuded from the interior of the leaf because the falling temperature of the air toward evening has diminished the evaporation from the leaves, while the roots in the warm soil are still absorbing water and consequently producing an internal pressure. The movement of water in these cases of bleeding, it will be seen, is necessarily toward the point of exit, which may be above or below the point at which the pressure arises.

III. SECRETION OF NECTAR.

A third sort of movement of water is that which takes place in the nectaries of flowers and leaves. The flowers of our common linden, for example, secrete a considerable quantity of sweet fluid, which is sometimes miscalled "honey," but is properly known as nectar. (Honey, by the way, is nectar after it has been digested by the bees.) At certain points in the flowers there are groups of cells whose special business it is to withdraw water from the parts below, and filter it through their outer walls, after having added to it the materials which make it sweet. The movement of water in this case is extremely limited.

IV 'THE TRANSFER OF FOOD.

The last movement of water of which I shall speak is of those solutions which contain the food of the plant. These materials are not those absorbed from the soil, or gathered directly from the air, but they are the substances which have been manufactured by the leaves out of material obtained from the soil and from the air. Since these foods are put together in the leaves, necessarily the movement of water containing them in solution must be in a different direction from that which supplies the evaporation. The materials thus manufactured in the leaves must be carried either to those parts which are growing, or to those places in which they are to be stored for future use. It is manifest at the first glance therefore that the direction of the movement must be in general inwards from the leaves, and since the roots require for their nutrition a considerable amount of these substances, there must be a very decided downward movement to supply them.

Now it is plain that these solutions of food must keep out of the way of those portions of the water which are cheifly to supply the evaporation from the leaves. We have seen that the latter travel in the sap wood. The food currents however travel almost exclusively in the inner parts of the bark. You will therefore understand why stripping off the bark, or even cutting it, ensures the death of the tree eventually even though the leaves remain long unwithered. Since the roots depend upon the food formed by the leaves, they perish when severed from their base of supplies.

The movement of the evaporation stream is relatively rapid. The movement of the food current is relatively slow. We do know something of the mode of movement of these food currents. They are apparently brought about through the process known as diffusion or osmosis, and are therefore necessarily slow. The cause of the movement is practically the same as that for the movement of oil in the lamp-wick, 'although it is by no means by the same method. The oil in the lamp wick travels upward because at the top it is being destroyed *as oil* by reason of the heat of the flame. So the direction and existence of the current of water containing food is because the various substances dissolved in the water are being altered at the place of growth or storage into new materials. The commonest of these food substances is sugar, and at the growing point of the stem, for instance, the sugar is being constantly destroyed *as sugar*, and is being converted in cellulose or protoplasm or some other material. So long as that alteration is going on, just so long will the sugar particles move toward that point.

I have thus tried to sketch very briefly, and only in outline, the differen movements which the water in the plant is undergoing. I have said nothing of the extreme variety of materials which may be found in this water in different plants, or even the variety found in the same plant at different times, but have endeavored merely to show you that there is going on constantly in the living tree a series of molecular and mass movements, of which too few people have any conception. To our imperfect knowledge let me hope that some of you may contribute facts which shall enable us some day to explain the many things which are now obscure.

DISCUSSION.

A. L. Hatch—I would like to know more about the annual roots; ought we to keep them and are the small roots only annuals?

Prof. Goff—They are, probably, only annuals.

A. L. Hatch—In grafting the grape in the fall will not the bleeding of the vine in the spring force out the scion?

Prof. Goff—This bleeding occurs only in the spring and might result in that way.

A. L. Hatch—Now, Prof. Barnes, wouldn't we expect that that pressure would occur early in the spring and before we get the union of the scion and the stock, so that the trouble would be the same as if we grafted at a time most favorable for the flow of sap?

Prof. Barnes—So long as the sap has a fall the pressure is nothing.

A. L. Hatch—There is a practical point in regard to this sap matter as explained by Prof. Barnes. So sun scald is connected with it we would like to know what can be done. Could the separation of the sap in the tree take place in the winter during a warm day.

Prof. Barnes—This may occur in winter and I believe that thousands of trees are killed in this way.

W. D. Boynton—If trees that are transplanted in the winter had a large ball of frozen earth attached to them would they not for this reason be more successful?

Prof. Barnes—I do not see as that has any bearing on the subject.

Prof. Goff—In grafting the grape we do not use wax.

A. L. Hatch—Has this flow of the sap anything to do with the blight?

Prof. Barnes—It has nothing at all to do with it.

PLANT DISTRIBUTION—BY THE WISCONSIN HORTICULTURAL SOCIETY.

CARL H. POTTER, Madison.

This is the subject which friend Hoxie invited me to report upon and discuss at this meeting.

Last spring when asked to take charge of the correspondence and bookkeeping incidental to the proposed distribution of strawberry plants so generously contributed by our worthy president I gladly undertook the work, viewing the matter from a purely philanthropic standpoint. At first when the letters containing the names of applicants began to come it was pleasure to record them, count the pictures of Uncle Sam which they con-a tained and send them on to Mr. Thayer. But when the letters began to come in at the rate of fifty or more per day, and many of them had to be answered, the care of them soon became like the care of the small boy for his new trousers after he has worn them the first half day—an old story. I should probably have grown weary of the work had it not been for the school ma'ms, those idols of my youth. I always did have a weakness towards school ma'ms any how! Yes, I had to write to a good many of the teachers. While a great majority of them sent in their lists of applicants and their fees all correct and in a business like manner, yet there were by no means a few who expressed themselves as being *so happy* and *thankful* for the kind offer of plants, but either did not know of or forgot that very important clause which required a *fee* of five cents from each applicant. These letters were held and the teacher requested by letter to kindly forward the proper amount. Occasionally this would requre considerable time, and then perhaps within a week your very humble and conciliatory corresponding secretary would have red hot verbal shot fired at him for the delay in their receipt of the promised plants. Or perhaps, as in one or two instances, where the fees enclosed were not sufficient for the names sent, the teacher would very pertinently reply that the proper amount of stamps had been sent. Then there was nothing to do but to make an attempt to whistle some sacred tune and to send in the order for the plants. But finally the smoke of battle cleared away, first gradually and then entirely.

It was found that fourteen hundred and forty-three names of pupils had been recorded and one half dozen plants had been sent to the owner of each. There were several districts in which local horticultural societies were organized, and one at least in which an excellent drawing of the school grounds was made and sent to me. All who expressed themselves, and most of them did so, were highly pleased with the arbor day scheme and took great pleasure in carrying out an arbor day program. Some schools that were not in session at the time but which convened soon afterward, held arbor day exercises as soon as they could and applied for permission to come in under the offer, which was granted.

It was pleasing to see how anxious the pupils and teachers, and parents were to get the plants and how readily and cheerfully the children promised to care for them and to report to me in October. But if naturally inclined toward pessimism the results so far as the reporting is concerned would tend to confirm one in that disposition. Of the 1,443 children who so freely and cheerfully gave their promises, but 118 reported to me in October. These were on the whole however, very encouraging. The letters and cards report a decidedly varying success, and also that a lively enthusiasm for horticultural subjects and objects has been aroused in the rising generation. They show that while the "young idea" is learning to "shoot" as of old he is now directing many of his shafts towards horticultural and kindred utilitarian objects and soon will have many of them at his feet.

Most of the children who reported patiently counted their masses of new plants but a few considered that to be too much of a task for them to undertake. Perhaps the reading of a few of the letters and cards from our young and future members would be of interest to you as showing their thoughts and feelings.

(Here reads a few cards and letters).

You will notice that most of the reports that I have just read are favorable, but there were not a few of the children who lost all or nearly all of their plants. There is a great variation in the success of pupils in the same section and same school. In one school the plants reported vary from six old ones and one hundred young ones all the way down to a total loss.

Quite a number reported one or more of the plants to have been in poor condition when received.

Making a condensed summary I find the following to be as nearly acurate as I can give you: In all 8,658 plants were distributed to 1,443 pupils in 210 different schools and at 161 different postoffices, for which was received fees amounting to $68.50. Of the pupils 118 reported their success in October. They reported 461 old plants living and 6,467 new ones. Thus their per cent. of old plants living is 65.1 or their loss 34.9 per cent.

From these figures the estimated total number of old plants received by the pupils which are now living is 5,536 and the new ones 78,406, there being thus an increase of almost fourteen to one.

I understand that Mr. Thayer has offered to renew his gift and to greatly increase it for this year, and that perhaps other parties will also contribute to the supply of plants. If this be the case I should like to make a few suggestions to those in charge of the work, among which are these:

1st. That a postal card be sent to each pupil to whom plants have been sent, which shall bear the printed addresses of the corresponding secretary.

2d. The postal card should bear pointed questions as to how many old plants have lived and how many new ones are growing, and other questions if desired, and also blank lines for remarks from the pupils.

3rd. It must be arranged in some way so that the pupils and the teacher shall write from the same post office, as otherwise the names cannot be found in the books and the report cannot be entered.

I am certain that a great many pupils failed to report for the simple reason that they had forgotten to whom or what to report. Under the circumstances as many have reported as could have been expected to do so and considering what a late spring and what a hot, dry summer we had they have had excellent success for amateurs in saving over sixty-five per cent. of their plants.

But now let us hear from Mr. Thayer and then make our plans as how we shall continue to remain in the esteem of our teachers, and parents, and pupils, and to promote the cause of horticulture in general in all ways that we can.

DISCUSSION

President—It appears a portion of the pupils have given the receipts; the letters I have are similar to those read by Mr. Potter. These letters are a fair sample. I received some letters from children whose plants all died. I sent to every child an illustrated sample how to set each plant and gave concise directions for setting them out, giving illustrations of too deep and too shallow setting and also when the roots were raised up in a bunch. It seems to me one of the first inclinations of the child is to have something of his own. We give a child a pig or lamb or colt and as soon as it matures we claim it and thus disregard the property rights of the child when we ought to consider the sacredness of his belongings.

I want to see this plant distribution carried out in this way and I wish every child that wants a piece of ground to put out a few plants could have it. This year I will increase the number of plants to be distributed and I will give 30,000.

Q. How were those plants sent out?

A. By mail; they were put in damp moss in oil paper to keep them moist.

A. L. Hatch—I move we accept Mr. Thayer's offer and that Mr. Potter be instructed to distribute them. Motion prevailed.

J. S. Harris—I think through Mr. Thayer's offer and your plant distribution you have done more to encourage horticulture in your state than you could have done in all the efforts in all directions in several years.

You are educating these children to take your places when you pass off and to do more thorough work than you have done You are not only doing good in distributing the fruit, but you are disseminating the truth. I went from Sparta to La Crosse not long ago; there was a school maam and a number of children on the train. She asked the children, "Who is the greatest public benefactor?" And those children unanimously said, "M. A. Thayer." He is personally interested in building up your society and I hope he will long live to be your president.

W. D. Boynton—I have been thinking that we might work up an interest in an ornamental line as well as in fruit, and I will donate 2,000 Norway spruce to be used on the same principle you are making the distribution of plants. They will be five or six inches high; they can be put in a small box and sent by mail, costing only about 5 cents postage on each little tree, giving perhaps six to each applicant.

Prof. J. E. Coleman—I think it would be well to work up this question of distributing the trees a little. I would suggest that you offer them as a reward to those that have done the best with their plants.

President—I suggest that the gift of Mr. Boynton be accepted, but that they be given to those that make the strawberries grow this year. I expect we shall see all these nurserymen coming up with these distributions.

Secretary—I rise to commend this gift of Mr. Boynton and to suggest that when Mr. Potter sends out to the children who have organized or will organize horticultural societies, he request them to send the names of their officers direct to the secretary, and we will publish them in the volume and will send one or perhaps two volumes of transactions to each society.

HOW SCHOOL DISTRICT NO. 4 WON THE GOVERNOR'S PRIZE.

DANIEL HUNTLEY, Appleton.

We commenced the discussion of ornamenting our school grounds in the local horticultural society. In this society six school districts are represented, though district No. 4 has much the larger number, having eight families that belong to the Grand Chute horticultural society. The discussion was transferred from this society to the annual school meeting; this was in the summer of 1888. The result of this discussion was the election of a special committee of five, three gentlemen and two ladies, whose business it was to awaken an interest in the district, mature plans, hold meetings to the end that a commencement should be begun the coming spring and summer. The three men belonging to this committee were, by the resolution offered, to consult with the school district board; this secured the payment of any bills or purchases made by the committee. No sum of money was named to be expended, in fact, we durst not try a vote on any sum, for by many it was considered very visionary and unpractical. But for the first time in the history of our school district several ladies attended this school meeting and spoke on the subject of making the school house and out-buildings and the yard neat and attractive, not only to the pupils of the school, but to the whole district; and although some few looked upon the whole thing with disfavor, yet the movement was carried by almost a unanimous vote. From the adjournment of this school meeting till the time of planting trees the next spring, the ladies of this committee, seconded by others, kept up the interest, planned what trees should be set, what ornamental vines and shrubs, wrote out their lists and sent them to nurserymen for lowest prices, had boys and young ladies on the lookout in our own woods for any and everything that would be desirable to plant in the school yard, visited the school, talked with the teacher and the school some ten days or two weeks before Arbor day (as it is now called), pledged each of the girls to bring some flower or vine or plant, telling who had them to give for that purpose, and each of the boys to bring a tree taken up with all the roots left on possible with roots protected from the sun and wind, arranged with the teacher a programme for appropriate speaking and singing, with a picnic in which the whole district were to join, both young and old, the picnic to come off between 12 and 1 o'clock, then the literary exercises, after which came the tree planting. Before the day of planting the committee had procured four or five loads of compost and mould that was to be used in the planting of each tree and shrub; from each family came a spade or shovel, and all were ready for the work.

What was not used of this for planting was used for mulching as far as it would go, and saw dust bought and put on as mulch to the remainder, and although the season was very dry nearly all of these plants lived. They had become the property of the school individually and collectively. Each pupil had a personal interest in the success of the life and growth of these trees. They were taught how to water successfully, removing the mulch and putting on a number of pailsful of water to each tree or plant if necessary and then again covering with the mulch. And so the whole school received a practical lesson in horticulture and received much real pleasure in doing this very pleasant work. Four years have passed and the trees and plants first set have grown beyond our most sanguine expectations. Each recurring Arbor day brings with it increased zest and pleasure, and room is found for many more trees and vines than first planned for. A bouquet of roses and other flowers, gathered in the school yard, adorn the teacher's desk at the annual school meeting, in front of the chairman. All of us feel as if our efforts had been crowned with abundant success. We believe we have a better school than before, and that the teacher and pupils are both inspired to do better work. No trees or plants have been carelessly or wilfully destroyed, and they have learned not only lessons in horticulture but to respect private rights and public property. Both old and young have been made better and happier for the work they have done.

Prof. Goff—Those scholars that have remembered to report should be rewarded in some way. I would be in favor of giving them more plants so that more will be reported next year. I suggest that an appropriation be made to our corresponding secretary so that he may not have to wait until the end of the year for reimbursement. I will submit it as a motion.

Motion prevailed.

A. D. Barnes—There is one idea that occurs to me, that we are passing over this question a little too rapidly. We ought to suggest to every school officer and board in Wisconsin to properly prepare the school grounds for the reception of ornamental shrubs. I think we ought certainly to call the attention of school officers to put the grounds in proper condition.

Daniel Huntley—If you put it off until the ground is properly prepared you will put it off entirely.

HARDINESS VS. QUALITY.

PROF. E. S. GOFF, Madison.

Some present will remember that at our last winter meeting Mr. Wakefield, of Fremont, read a very interesting paper on this subject. This paper contained a vein of humor that caused us to laugh heartily, but beneath its sparkling surface was an undercurrent of thought which, were we obliged to accept it as true, is surely melancholy enough. Divested of its humor Mr. Wakefield's paper was an argument to prove that, in consequence of an alleged law of nature, the production of good apples in our state is forever impossible, because great hardiness and superior quality cannot exist in the same variety. The following sample paragraph will serve to illustrate the trend of Mr. Wakefield's argument: "Show us an apple that may be eaten without an inclination to make unpleasant remarks and we will show you one that requires extra care and nursing. An iron clad apple must have an iron clad flavor. Quality must be sacrificed to hardiness every time. We should acknowledge this fact and quit our vain striving for the impossible."

What was more to my surprise, a member of our society who possessed reputation as a pomologist at the time of my own birth, and whose life may be said to have been largely spent in the promotion of the interests of pomology in this state, appeared to second Mr. Wakefield's proposition. The evidence to the contrary that I was able to recall on the spur of the moment, was flippantly disposed of by these venerable gentlemen as the theory of a scientific man which could not for a moment stand before the resistless sweeping testimony of experience. As I had already given this subject more than a passing consideration I felt that I could hardly doubt the correctness of my own position. But realizing that the subject is one of vast importance to the future of apple culture in our state and that we are always in danger of receiving impressions from insufficient evidence, I determined to make a more thorough study of the premises than I had ever done before and to present the results of my investigation as a paper for this meeting.

It is safe to assume that if there is a correlation between hardiness and quality in apples this correlation is capable of demonstration by a careful study of existing varieties. Apples of which the tree is recognized as hardy by our leading pomologists when separated from others that are not so recognized, should differ from the latter group in their average quality, and if Mr. Wakefield's proposition is correct, should be found distinctly inferior to the latter group in their average quality. If, on the other hand, it can be shown that the same average degree of quality obtains in the hardier varieties as in others, we may seriously doubt the existence of any such correlation.

It is generally admitted that the Downings have given us the most exhaustive study of fruit varieties. There is no evidence that the two thousand descriptions of apple varieties made or compiled by these authors were warped in the slightest degree by prejudice upon either side of the question now under discussion. When therefore, the degree of hardiness and the quality of a variety are both distinctly stated, we are justified in using such data as evidence upon this question. To assume that the terms used by these and other writers on pomology in the descriptions of apple varieties have not been carefully selected to express the true characteristics of the varieties to which they are applied, would be to impeach the highest authority on these subjects, which surely no member of this society can afford to do.

In Downing's descriptions, the quality is not always definitely stated. For the present purpose it has seemed possible to use only those varieties in which the quality is distinctly stated in terms that make different varieties clearly comparable. In the second revised edition of Downing's Fruit and Fruit Trees of America more or less complete descriptions are given of 2,035 so called varieties of apple, but of these the quality is distinctly stated in but 1,254 varieties. Of these 1,254 varieties, 129 are designated as "hardy" or "very hardy." In the remaining 1,125 varieties, nothing is said as to their hardiness. Thus we have two groups; one of 129 varieties in which hardiness is given as one distinctive quality and one of 1,125 varieties, which are not pronounced "hardy" though in very few cases in the latter group are the varities stated as lacking in hardiness. Now if Mr. Wakefield's proposition is correct, we should be justified in expecting that the average quality of the 129 "hardy" varieties would be rated lower than the other group. What do we find? Of the "hardy" varieties, 1.5 per cent. are rated "best" quality, while of the other group but 1 per cent. are rated "best." Of the hardy varieties, 6.2 per cent. are rated "very good to best" while of the other group but 2.7 per cent are rated "very good to best." Of the hardy group, 36.4 per cent are rated "very good" while of the other group but 20.8 per cent. are rated "very good." Of the hardy group, 21.7

per cent. are rated "good to very good" while of the other group 19.2 per cent. are rated "good to very good." Lastly, 34.2 per cent. of the hardy group are rated "good" while of the other group 56.3 per cent. are rated "good." "Good" is the lowest quality that we have here considered. As a matter of fact very few varieties are rated, in the book under consideration, as of lower quality than "good" for the obvions reason that an apple not of good quality would rarely be considered as worthy of culture and consequently of description.

I should add that of the varieties placed in the group rated as "best," two were pronounced in the book as "excellent;" and one of these fell in the hardy group. This is the only instance in which the wording of the text has not been literally followed, except in a very few cases where varieties are termed "very hardy." Such have been considered in the hardy group.

As the work cited is the only one that can offer any claim to being exhaustive, it has seemed hardly worth while to subject less voluminous authors to the same scrutiny that I have given Mr. Downing's work. Nevertheless, I have not limited my investigation to Mr. Downing's book. I find in Warder's American Pomology that the hardiness and quality are both stated in 21 varieties. Of these 19 are called "hardy," 1 "very hardy" and 1 "remarkably hardy." Of the 19 "hardy" 1 is pronounced "first quality," 1 "best quality," 1 "almost first quality," 1 "almost first rate," 1 "almost best," 1 "very good," 1 "good to very good," 8 "good," 1 "first rate market or cooking," 1 "very good cooking," 1 "good for cooking" and 1 "scarcely good." The 1 variety called "very hardy" is pronounced "good" and the one called "remarkably hardy" is pronounced "best." There is certainly no evidence here presented that the hardy varieties average poorer in quality than others.

I have also examined President Lyon's Michigan Fruit List as published in the report of their society for 1889. Of its 36 varieties 8 are pronounced "hardy," of which 1 is rated "best," 3 "very good" and 4 "good." One is called "very hardy" and pronounced "very good." Three varieties in this list noted as lacking hardiness are pronounced "very good."

From the evidence deduced, the conclusion is warrantable that if Mr. Wakefield's proposition is correct, the varieties thus far described in this country offer no evidence to prove it. Indeed, were I seeking to prove the hypothesis that the hardier varieties are superior in quality to others, the figures cited would offer a very respectable array of evidence in that direction.

But it may be asked if I do not admit that the average quality of apples at present grown in Wisconsin orchards is inferior to that of those grown in some more favored orchard regions. I do admit this, but no such pessimistic hypothesis as that proposed by Mr. Wakefield is needed to explain this fact. If we but acquaint ourselves with the conditions, the problem explains itself. As we ascend in the scale of quality, the number of var ties rapidly diminishes. For example, in Mr. Downing's work 675 varieties are rated as good. The next higher grade of quality includes 244 varieties. The next grade includes 282; the next 39, and the highest quality, rated as "best," includes but 14 varieties. In other words, out of 2,035 varieties regarded as worthy of description, but 14 are pronounced of first quality. Who shall estimate the myriads of seedling apples that have grown and borne fruit in our country that have not been regarded worthy of naming, description or propagation?

Again, as we approach the northern limits of the apple belt, the number of varieties that can endure the climate rapidly diminishes. Obviously then, the number of varieties of first quality that may be grown on the northern confines of the apple region must be comparatively very small. In order to make up a succession of varieties in the more northern orchards with our present available list, some will have to be admitted that would not be regarded worthy of culture in a more favored region.

I see no reason whatever, for doubting that a list of varieties sufficient for all seasons and equal in quality to the finest products of the eastern orchards, may not be produced and successfully grown in all the apple regions of our own state. It may be urged, that the double problem of securing hardy varieties of superior quality renders success so difficult of entertainment as to render it useless for one to make the attempt. But we should remember that the apples thus far produced, have been, with a very few exceptions, the result of chance without the slightest application of the science of breeding. We have but to use the same care and intelligence exercised by the breeders of blooded stock and we shall be reasonably sure of success. We have already a sufficient number of excellent apples, among which I may mention the Fameuse, Wealthy, Longfield, Newell, Getman and Switzer to serve as parents for a new race of hardy apples of first quality, and we have but to intelligently use these with the proper combinations to give iron clad trees and we shall soon rejoice in as fine a collection of choice apples as any of our more favored states can boast.

DISCUSSION.

J. C. Plumb—I desire to have a full discussion on this paper by Prof. Goff. When he spoke in his paper of the remarks in a paper from a gentleman from Waupaca county that certain fruits, if hardy, could not have quality, is something that gentleman gathered from me. I am personally responsible for the statement and am here to defend it. I do not want Prof. Goff to bring Mr. Downing as proof, for that is the weak point of his argument. Mr. Downing's experience was all in the east. I prefer to take facts as *we* find them. I will ask Prof. Goff or any other man to take any of the apples this society recommends as hardy and say if it is a *good* apple. Is the Duchess a good apple from the standard of eastern excellence? Show me one if you will. What's the reason? It remains for Prof. Goff to show us the reason for such things if they exist.

Mr. Ramsey—Mr. Thayer, I brought an apple here from our vicinity. I believe it to be *the* best apple without any exception. Mr. Hoskins sent it. I know it to be perfectly hardy. I do not think there is as good an apple on any one of those tables as this one is. If it is necessary to have a poor apple because it is hardy, then this one must be a freak of nature.

O. F. Brand—I most heartily endorse Prof. Goff's position and I cannot endorse Mr. Plumb's, that "we cannot have good varieties of apples in the north because hardy varieties are not good." In the future our apples will be of our own production; we shall not go east for stock or seeds. We find that the best we have have come from the best parents, and that fact proves that in the future we shall have a superior class of apples.

J. C. Plumb—I would like to have any one come to this table and pick out a *good* apple. I would like to have the test made right here to night; the apples are here and show for themselves.

A. L. Hatch—I do not know what is the object of deprecating a buoyant view of this subject. We call the Fameuse, the Newell and the Longfield—all of them—fairly hardy and their quality is good. We have tested these seedlings grown by Mr. Freeborn and we called them of good quality. I do not see any use of taking this view; I do not see it carried out in any of Mr. Freeborn's seedlings.

W. A. Bernap—We must take all of these things in a practical way. Take them as they are rated on the market. You can sell in Chicago a barrel of Duchess for a fine market price, and you will see them all over Chicago sold as an eating apple.

J. C. Plumb—I do not wish any one to think that I wish to depreciate our western fruits. We want something a little hardier than the Wealthy or the Fameuse. We want the Hibernal with a quality that will carry us through the winter.

J. S. Harris—My expectations are very different from those formed by Mr. Plumb. I believe you can improve the quality of the Hibernal without losing its hardiness. It is the influence of the cultivation, soil, climate, atmosphere and the mineral in the soil that produce the difference in the quality of these apples. If there are elements in our soil that can convert the acrid taste of the crab to the sub-acrid nature, why can we not convert the crabbiness out of the apple?

Prof C. R. Barnes—I heard Prof. Bailey of Cornell University on this subject; he had investigated statistically, and his investigations covered a large field, and his results agree with the statements made by Prof. Goff.

Adjourned.

THURSDAY, A. M., February 9.

REPORT OF COMMITTEE ON RESOLUTIONS.

1. *Resolved*, That our thanks are due President Thayer for his great liberality in donating over eight thousand strawberry plants to the school children of Wisconsin last season and that his munificent offer of thirty thousand plants for the same purpose this year, merits our gratitude as being an example of liberality of great import in the further education of horticulture in our common schools.

2. *Resolved*, That we appreciate the co-operation of the Superintendent of Public Instruction and Mr. Hutchins, Librairian, in sending out the circulars of our society, announcing the plant distribution last season, in connection with Arbor Day circular, and we pledge our support and co operation in the further work proposed in the same line this year.

3. *Resolved*, That we cordially appreciate and commend the good service which has been done for horticulture in the University Agricultural Short Course through the work of Professor Goff and we will heartily support his plans for future work; and we earnestly endorse the plans of Professor Henry to broaden the facilities of our Agricultural College in horticultural work. We recommend the adoption of some plan whereby the usefulness of the Agricultural Short Course may be brought to the attention of the young people of our state through the efforts of the school teachers.

4. WHEREAS, We recognize the advantages afforded the young men of Wisconsin by the generous provisions of Hon John L Mitchell, giving $2,000 each year for scholarships in the Agricultural course at our State University;

5. *Resolved*, That we hereby express our appreciation of Senator Mitchell's effort to promote the facilities for an advanced education and the thanks of the Wisconsin State Horticultural Socitey are hereby tendered him.

WHEREAS, The railroads of this state having in the very necessities of the case, marred and disfigured our beautiful landscapes; passed through some of finest private and public grounds; and given us in place unsighly cuts, embankments, poles and structures, which, while to a great extent unavoidable, is nevertheless much to be deplored; therefore, be it

1. *Resolved*, That it is the sense of this body, that as the railroads have so disfigured the natural and beautified features of our state, it is but fitting and right that they take steps to beautify their own grounds whereever practicable by laying out and planting to ornamental trees, shrubs, and flowers, as is now being done with excellent effect along the lines of some of the largest eastern roads, through Ohio, Penn., New York and other states.

2. *Resolved*, That by the passage of this resolution, the president of this society is empowered and authorized to appoint a committee of three members of this society whose duty it shall be to confer, personally or by correspondence, with the management of the various railway corporations having lines in operation in this state, setting forth the desirability of such action as out lined above, and pledging the cordial co-operation of this society in the way of furnishing any information or data at its command, that may assist in the practical prosecution of this work.

Resolutions were adopted seriatim and it was voted to send a copy of the resolutions relating to the Mitchell Scholarship to each member of the legislature, to president C. K. Adams and Hon. John L. Mitchell. President Thayer appointed Secretary Hoxie and Prof. E. S. Goff to confer with the management of the various railway corporations in accordance with resolutions 5 and 6. President Thayer was added to this committee by vote of the society.

Report of Committee on Fruit and Vegetables.

Report of Committee on Finance.

Report of Committee on New Fruits.

Report of Committee on Memoriam of Prof. Charles C. Chanter was accepted and voted that it be printed in the Transactions and a copy suitably bound be presented to the family of the late Prof. Chanter.

FRUIT GROWING IN THE CHIPPEWA VALLEY.

By J. F. CASE, Eau Claire.

I came to Eau Claire in September, 1886. All the fruit we had at that time was Blueberries and they were delicious. A God-send. We ate them raw and ate them cooked, cold and warm, we used them for pies, sauce and pickles and some of the more skillful made them into what they called a Johnathan (similar to a peach cobbler), and they were nice. It was some five years after that about sixty five, I don't recollect exactly, a man from Sparta by the name of Sabin came that way and sold the settlers apple trees. Some bought quite extensively and some were afraid; most of us were too poor, I was one of them. These trees were said to be grown at Sparta—presume they were—and they were Siberian and Rusian apples, recommended to be perfectly hardy; then there were agents selling some that were grown in Sauk county, I believe in Baraboo, and Fields, of Osseo, Trempeleau county, had a small nursery; he sold some of his stock soon after among my neighbors.

Now I didn't know anything about that kind of fruit; I watched close the different trees from the different nurseries, I found that the Sauk county and Osseo trees looked a great deal nicer and thriftier in the same orchard with the same care and at the same age than the Sparta trees did.

Now why was this, the same species grown in the same latitude with the same care, why the difference.

In the fall of 1871 I went to Osseo, about 15 miles, and Mr. Fields sold me some trees. I planted them right away, they were the Hyslop, Transcendent, Duchess and Tetofsky.

The ground that I planted these trees on lay right above some big springs, and before it was broke was a good hay marsh, dry marsh covered with ramrod grass. Soil was a black loam, dry and cold, on a northern slope; was cultivated one year after the trees were set, and then it was seeded to timothy and has been ever since. I sold the farm one year after I set the trees. I was there last summer and I was surprised; the trees were loaded with apples, and they were as nice trees as I ever saw anywhere, about from 8 to 10 inches in diameter, 22 years old. There is one more thing I noticed, that the most of the trees that were set out in those early times were set on the second bench, that is the next bench above the river bottom; the land lay comparatively level, sort of a grub prarie, burr oak, Jack oak and gray pine, sandy loam and some of it very poor sand at that; there is where the country was settled first, and there is where the most of the orchards first set. On the next or highest bench the land is of a better quality, heavy clay loam and more stone, sort of a marl, and hard sandstone full of small shells. On that level you can find some fine little orchards of quite large trees looking thrifty and smart; the blight is the only thing that hinders their growing plenty of fruit, but on the second bench, unless where they have had wind breaks and extra care, there is nothing standing but a few old stubs.

I was last summer up the Chippewa, way up in the woods where people have settled within a few years, and the most of them have put out small orchards and the trees look splendid. There were a great many standard trees that had been set out three and four years that looked fresh and nice. In the timber is the place to grow fruit. I saw trees loaded with nice blue plums up around the chain of lakes twenty miles north of Chippewa Falls.

Take it all north of us in the timber and all along the south shore of lake Superior and it will eventually be the best fruit growing part of this state. It is situat ed just as Michigan on the south shore of lake Michigan, and as good a soil and better market. They are building up some large cities there that supplied with fruit.

We are but just getting started in fruit now. Ten years ago and there was no fruit brought in to Eau Claire but a few Wilson strawberries and those brought in old stove boilers and soap boxes, and sold for big prices considering. Now you can't find a market in the state better supplied with small fruit than Eau Claire in season, and there is all the home grown apples in the market in the season that we can use, such as Wealthy Duchess, Tetofsky and the various kinds of crab apples. Two years ago this spring I made a small start in the small fruit business. I put out some Turners, Philadelphias and Highland Hardy raspberries; you all know what they are, they were good and all right in their time as long as there was nothing better, but I never was satisfied with them. I never could realize more than ten cents a box for them, and rather dull sale at that.

I looked around and found the Brandywine, Marlborough and Golden Queen advertised at about $3 per dozen. I sent for a few to try them, went slow you see, but the first season satisfied me that they were far ahead of my old ones. I could sell them right along for 25 cents per box quicker than the others for 10, and I could sell them to dealers for from 12½ to 20 cents by the crate and always in good demand. As soon as I could get plants to put out, I pulled up my old kinds and replanted with the new. I now have the best fruit in the market. I had four boxes of my raspberries at the summer meeting of the Minnesota State Horticultural Society last July at Lake City and got first premium there.

Now I know it pays to raise the best of everything. It does not cost any more to raise the best than to raise the poorest, but some are content to plod along in the old track. "What was good enough for my old ancestors is good enough for me." But somehow I can't feel that way. I want to try all and hold fast which I find is good. If a man has a mind to take hold of the fruit business in the Chippewa valley with a determination to win he can and will do it. There seems to be a brighter outlook in the direction of fruit growing within the last few years than there has ever been before, more new orchards being planted, and they seem to see by the situation of some old orchards that are doing well and take more pains in selecting sites for their orchards, and in selecting the varieties, which they have learned from the old pioneers in horticulture and from reports that have found their way into different papers and publications.

I tell you fellow members these societies are doing a great work in their way. I know that our little local society has been the means of awakening a great deal of interest on the subject, the short time it has been running; we have got no old experienced hands at the business to counsel with, none of them to come to our gatherings and give us a few encouraging words from their experience; now we are not selfish by any means, our latch string hangs out and we invite all to come that are interested in horticulture and hear and be heard whether they are members or not; if they feel disposed to join us, we are very much pleased; we need some funds for our experiment station and contingent expenses. Fellow members I have spun my few disconnected ideas out to considerable more than I expected to when I began. If I have said anything that is of any benefit to any one, I am glad of it. You can easily see by my few lines that I am green at the business and I trust you will over look my shortcomings.

DISCUSSION ON SMALL FRUITS.

Warren Gray—In regard to the successfnl growing of small fruits I think we are all agreed there is no question. There may be a question about apple growing. If we plant raspberries, blackberries and strawberries in proper soils and give protection, we can grow small fruits satisfacrily. In regard to the demand and the market, it is often said to me "there is danger of overdoing the demand." But results show that we need not fear of overdoing the market; we find if we increase our plantations that the market increases as fast. The direction in which we shall succeed is to grow better quality.

Q—Name your choice, Mr. Gray, for early and late red and black raspberries.

Warren Gray—Turner for red and perhaps Cuthbert and Golden Queen for early. The Gregg I do not like; with me its too seedy and too apt to rust. The Turner comes quite early; it is small and quite apt to rust; that is the objection to it. Older is a better berry than the Gregg. I have a friend that is shipping the Older quite a distance and it is proving satisfactory. It is a bright berry free from bloom.

Wm. Toole—The gentleman who has just had the floor has a doubt about our raising apples in Wisconsin. Now it is not a fact that we cannot raise apples here; we are not so bad off as they are in some other states. We *can* raise apples and outside of the state they want all of the apples we can furnish them.

Will Hanchett—Does Mr. Gray consider protection essential, and what per cent. of risk would there be if left unprotected?

Warren Gray—It is hard to get at the per cent. A gre t many of my neighbors left their berries unprotected.

Will Hanchett—One of our neighbors said: "These fellows claim you have got to lay these berries down, but its all nonsense. I sold $50 worth off my half acre this year." I thought to myself this is all right, but we got $200 off our half acre.

C. E. Tobey—You cannot ship the Older more than fifty miles, while you can ship the Nemaha 200 miles.

Will Hanchett—Ohio growers claim that they can grow successfully without protection.

President—I had four or five acres of the Ohio. I left part of them unprotected. When I took up the canes in the spring I did not see much difference, but when I came to pick them there was fully 100 per cent. difference; now I lay down everything on the farm.

Q—Do you cover the Marlborough?

President—I do, but not as much as the other varieties.

J. F. Case—I cover up mine, just the tips, and they come out all right. I think that is all they need. I grow the Marlborough and Brandywine. The Rancocus is not worth anything. I dug them up and destroyed them. I want to know what the curled leaf is and what you do for it? Prof. Green of Minnesota said it was a root fungus and there was no remedy for it that he knew of.

President—The only remedy I know is to dig it up and destroy it. If that gets a foothold it will wipe out all our raspberries. It has wiped out some varieties.

B. F. Adams I believe if we cannot get berries without covering that we had better cover, but I think we ought to try and get a variety that will stand up during the winter. The Gregg I have discarded entirely, the Nemaha is much more hardy.

W. J. Bendixen—The Marlborough stands in the same bed by the Cuthbert all right, but the Cuthbert I am shy of.

W. A. Bernap—Mr. Thayer, what is your choice for shipping qualities for early and late, red and black?

President—For early I am using Hansell, for late, Marlborough; blacks for early, the Nemaha and Ohio for late.

Will Hanchett—Do you have any trouble with the Cuthbert making a late growth and not ripening up its wood well in the fall?

President—I cut the wood back. I do not consider the Hansell a very profitable berry.

L. G. Kellogg—My experience is that the Hansell is not good for anything as a commercial berry.

J. F. Case—Isn't the Hansell more apt to have curled leaf than any other and isn't the Hansell the same as the Rancocus? [Ans. No.] I find the Hansell always to be affected with the curled leaf, the Brandywine never.

Will Hanchett—We have to stop cultivating the Cuthbert early in the season or we will have the late growing and the failure to ripen up.

E. J. Scofield—I have fruited all of the varieties that have been mentioned here except the Older and I do not like to see the Gregg take a kick for it has yielded me more money than anything else I have had. It paid me $800 an acre.

Will Hanchett—I am like Mr. Scofield, I do not like to see the Gregg take a kick; it is the berry that goes on our table three times a day and it's the variety that our customers want when they want something nice.

C. E. Toby—Does Mr Hanchett grow the Nemaha?

Will Hanchett—No. I feel almost guilty when I go to Mr. Thayer's and see the success he is having with the Nemaha.

B. F. Adams—I obtained my Nemaha of Mr. Hamilton and for several years I thought them identical with the Gregg but the Gregg are not so hardy. Down here where we let berries stand up we want something that is hardy.

W. J. Bendixen—Has any one ever grown Shaffer's Collossal?

President—For family use I regard them as the best berry we have, but if I was going to ship I expect I would do as you do, grub it out.

E. J. Scofield—I ship to Janesville, only seven miles, and I cannot get rid of it.

R. J. Coe—I want to say a good word for the Shaffer, it is one of the best berries we have. I ship it.

J. F. Case—What is the difference between the ripening of the Hansell and the Gregg?

President—About twenty-four hours. I think the Hansell is a little better berry to eat.

A. L. Hatch—I want to say this, that I think the Muskingan will prove a disappointment to those who try to grow it.

J. F. Case—Have any of you grown the Minneweski?

R. J. Levi—We have it on our grounds. it has stood up well and is a good fruiter.

Will Hanchett—In tying up our berries we like the method of using one post and nailing a cleat across, better than we do the two posts. There is not so much of a side draft away from the rows.

L. G. Kellogg—I think two and one half feet is the rule for trimming to have a proper head for the blackberry but you will have to vary the height according to soil and location.

President—That is right the reverse of my experience I find if I pinch at about ten inches I do not have too large a stalk, but if I pinch higher I have a large stock that is apt to split in laying down.

B. F. Adams—We pinch very low here. I can show a field of blackberries, about two acres, that are just about covered with the snow.

President—All these discussions teach us one lesson; try your own soil, your own location. We ought to profit by our own experience and methods of cultivation.

L—Is the Fay currant hardy and is it profitable for Wisconsin?

A—No.

THE CRANBERRY.

W. S. BRADDOCK, Mather.

Scott, in his novel Waverly, describes a morning in the Highlands where the hero has his breakfast at the cave of Donald Bean Lean, the highland chief who scorns to be called a cattle thief because he had never in his life "lifted" less than a drove. The repast was a luxurious one, considering that Alice, the buxom, bright eyed hostess, had already tramped home four miles that morning to obtain the milk and the eggs, the butter, the barley-bread and the honey, which had all been begged or borrowed from the neighbors. To these, the author says, were added a few bunches of cranberries, gathered in an adjacent morass, which served to give zest and flavor to the meal. I mention this to illustrate the point that not only has the cranberry been recognized as a healthful fruit for a long time, but that its range or habitat is widely extended. In fact it may be said to grow anywhere in the temperate zone under suitable conditions. But to cultivate it, to civilize this Indian and eradicate its wild nomadic nature, was thought, for years, to be an unprofitable, if not a trivial thing. It was never successfully done in Europe or Asia, and it remained for American thrift and energy to demonstrate its possibilities. The pioneers in cranberry culture had much to contend with. They had not only to curb and restrain the untamed vine which seemed to develop the greater cussedness the more they tried to teach it decent, civilized manners, but they also met the scorn and ridicule of their friends, the public, at the failure and disappointment which marked their earlier efforts. It did not take much thirty-five or forty years ago in New Jersey and Massachuetts to earn the title of "cranberry crank;" and the only thing that saved them, that caused that thorny crown to blossom into roses, was that they kept at it. Perseverance brought success, with success came money, and then the wise men to whom it had been a thing for jeers and laughter tumbled over each other in unseemly haste to get into and elbow the cranks out of the business.

In the west things have been conducted in somewhat different fashion and on a broader and more liberal scale. The wide extent of our marshes and the generous crops which they yielded in favorable seasons before there was any thought of cultivation rendered this possible.

Whether the Indians themselves in early days made use of the fruit to any extent I do not know. I think it doubtful, although one of our enthusiastic growers has pictured the scene of the greatful, generous Indian presenting his dyspeptic, despairing white friend with a decoction of the juice of the cranberry, and restoring his patient to health and vigor. Certain it is, however, that it did not take the white man long to discover and bring into market the wealth of fruit which our Wisconsin marshes furnished. Twenty or twenty-five years ago there was early every autumn a movement towards the cranberry region. The farmer packed his wife and family with a few necessaries into the wagon and started for a ten day's or two week's campaign against cranberries and mosquitos. Men set out in companies with tents and outfit complete, and traders went in with goods and provisions, including, of course a pletiful supply of fire water to sell or barter with Indians and whites alike for the crimson berry. These lands then were the property of the state, and their product was of course free to all; each one's share being limited only by his ability to pick or scoop them in. And so eager and so numerous were the pickers that laws had to be enacted, regulating the time of picking so that all might have, as nearly as possible, an equal chance. They gathered the berries by hand or with rakes of different kinds into boxes, bags, anything, and carried them sometimes for miles on back or shoulder over quaking bogs and through swamps and forests to the camps, whence they were hauled in wagons to the nearest shipping point. I have been told by one of these jayhawkers as they were called, how he once floated over fifty bushels of berries in sacks a long distance down a creek to a convenient landing place where teams were in waiting. Prices ranged from ten to fifteen dollars a barrel, and the profits were such that it resulted in a change of ownership. The swamp lands were bought from the state at low prices, and the phenomenal success of a few natural bogs near Berlin caused the investment of considerable capital. The spectacle of a single marsh like the Carey's with a small outlay for improvement producing over ten thousand barrels a year and yielding a profit of over seventy thousand dollars a season, was demoralizing not only to the owners, but to their would-be rivals. They talked of "cranberry kings;" but it seemed rather that the history of disaster which years ago signalized hop culture in Wisconsin might be repeated with the cranberry. All that was thought necessary was to ditch a little and dam a little and let nature do the rest. Much of the money spent in this way was practically wasted, for somehow the combination did not work. It was found that the cranberry would stand a deal of damming (which it got) and that a generous supply of drainage ditches did not disagree with it; but when such work was done unwisely or promiscuously, and a blind dependence was placed in nature to cipher out the balance of the problem some thing or somebody had to suffer. And almost invariably it was the cranberry and those who expected from it impossible achievements. There is a large plantation near Mather which has over forty miles of ditches and dams, one half of which would better never have been made. A little distance to the northward are some fifteen or twenty miles more improvements which have been abandoned. The ditches are grown up with moss; the flumes rotted away, and the dams become the homes of the mink and the muskrat.

But with the passing of the cranberry king (poor fellow! the leaves have withered in his garland and the bright red berries which served for jewels in his crown are shrunk and shrivelled; he was king for but a day!). When he went out, I say we began to learn wisdom, and we have been acquiring and storing away solid chunks of it ever since. Nearly all our wisdom, however, comes from experience and that as you know is the dearest and most highly prized. For instance, we have learned that the berry worm like the grasshopper may become a burden; that frost and drouth are nearly related if not twins; that as we cannot pluck the luscious pear from the bramble bush, no more may we find the cranberry upon the feather leaf and sage bush. In other words, we have learned hat to succeed we must work and watch and prey upon everything that lives, whether in earth or air, or water, and is inimical to the cranberry. This of necessity implies better methods of culture. During the past five years there has been a decided advance. We are developing, so that one can truthfully say that we have bogs in Wisconsin upon which the improvements are now fully equal to anything they have in the east, and which are projected upon such a scale that both in acrage and amount of the product we must ere long outstrip them. Our industry is like a lusty youth. He is a little awkward withal; his clothes do not exactly fit him and his hair is unkempt. But the solid substance is there; with use and custom ease will come, and prosperty will smooth and polish the rough exterior.

I have touched thus lightly, in outline, as it were, leaving you to fill in with appropriate color, the picture of the development of our business, imbued with the thought that perhaps it might prove of greater interest to you than if any particular feature were selected and discussed in all its details. I might, to be sure, yielding to the insatiate demand of some for scientific nomenclature, and wide research gravely tell you how the cranberry grower at different seasons and its different stages of growth manages the *Macrcarpus vaccinium*, how he is tormented and perplexed with the *cassandia calaculata*, and the *andromeda polyfolia*; how he wages fierce warfare, wordy, and otherwise, with his enemies the *phytoptus*, the *anchylopera*, and that basest of all villians, the *acrobasis vaccinii*; I might, I say, give you all this and much more, in full confidence of you ability to clothe with flesh these dry bones of science and make them instinct with life. But I forbear. For I know under what a burden of sesquipedalain names the members of this society already labor, and I have too strong a sympathy for their bending backs to add one jot or tittle to its weight by piling on the words which are appropriate to cranberry literature. I never did have a high regard for the average nomenclator, for from the time of Adam, who is said to have been the first to name things, down to the present day, they have cut some curious antics. Inded I have often thought that the only point in which their work can be said to resemble humanity is that the majority of their names, like man, is fearfully and wonderfully made.

I do not think that our cranberry grower can be found guilty of modesty. He is ambitious and claims much, still when put to the test he seldom fails to prove his case. But there an certain claims made as to the qualities of the Wisconsin berry which to his mind are so clearly established that they may be considered axioms. They are part of his creed and you could no more convince him of the contrary or divorce them from his belief than you could the lover from his mistress. He believes first that our cranberries have a finer and better flavor than those grown elsewhere, second, that they have better keeping qualities, third, that having more pulp they weigh more to the barrel and make so many pounds more of sauce or jelly than the larger varieties. These claims have been tested and as has been remarked have been proven to our satisfaction so often that I shall do nothing more than state them. But upon the chief and final article of our creed, viz.: That they are the most healthful fruit that grows, I desire to say a word or two. That when properly prepared they are grateful and refreshing to the healthy man all are agreed, for they supply to the human system certain acids and salts which are known to be conducive to health. Analysis shows that the fruit contains a little over eighty-eight per cent. of water, the remainder consisting of woody fibre, potassa, soda, lime and magnesia, the sesquinoxides of iron and manganese, sulphuric acid, chlorine and selicic, carbonic and phosphoric acids. It is this combination which gives it a piquancy and flavor such as are possessed by no other fruit.

It is a well known fact that the berries are an anti-scorbutic; they are grateful to the sick and convalescent, and in certain forms of dyspepsia have been used with most beneficial results. But there are those who go even farther than this and make claims for the cranberry which, though plausable, can hardly be said to be established. It is suggested that when freely used they are not a cure, but a preventive of Cholera. The reasons for this are briefly stated as follows: It is well known that the *comma bacillus* which Dr. Koch of Berlin in 1883 succeeded in identifying as the infecting agent and cause of the Asiatic Cholera is always destroyed by acids; but is rapidly developed in alkaline moisture. In his treatise on the subject the Doctor says that the gastric juices from a healthy stomach during the process of digestion will destroy the bacillus, and therefore it does not follow that infection would result from the introduction of the germ into the stomach. It is a fact, however, that this organ is not always filled with stronly acid masses of food, but very often its contents have a neutral or even an alkaline reaction. It is during this condition that the bacillus would pass unharmed through the stomach and develop in the lower intestines. In all the tests, so far as I have been able to learn, sulphuric acid was chiefly used for the reason that it was observed that the workmen employed in industries where sulphuric acid gas was given off during the processes of manufacture were singularly free from cholera. The acids, then, are microbe killers and it is upon them that we must depend if we wish to prevent the germs of his dread disease from developing in the system. The sulphuric acide of commerce is a very powerful agent; a few drops of it go a great ways and it cannot safely be employed in any form except under the advice of a physician. The cranberry, however contains sulphuric acid in combination with selicic, carbonic and phosphoric acids (all germ destroyers), in such quantities that it is known to be safe, and by many is believed to be effectual. This is advanced not as an argument or as statement of scientific facts; but as a suggestion which has something of merit in it and is certainly worthy of a test. The conclusion of the matter is: use cranberries in plentiful abundance; keep a sound mind in a sound body, and you will thus be able to attend the World's Fair in safety and be happy.

DISCUSSION.

A. L. Hatch—What was the cranberry product?

A.—One hundred thousand barrels last year. Eastern growers produce more per acre, but we can produce as much if properly managed.

M. Burr—One barrel can be produced on one square rod. Cranberries do not require fertilizers or a rich soil.

W. S. Braddock—I have shipped regularly for a number of years to parties and they will not have any other than Wisconsin berries. The late Cyrus W. Field would not use any other; he some way got a prejudice in favor of Wisconsin berries.

Secretary—Many of you know there is a bill introduced in the legislature to aid the cranberry growers and they want us to lend our aid and influence in its passage. They are working single-handed and alone trying to experiment with the different varieties and to publish their transactions. They have our co-operation. I have noticed, and it was brought out in Mr. Braddock's paper this morning, that the eastern varieties were lighter colored. It seems to me this is a great field for Wisconsin horticulturists to have these better berries developed. I do not see any reason why we cannot get new varieties as we have in apple growing.

J. S. Harris—In the course of my tramps I ran across a plantation in Minnesota of a light or white berry. I cannot find out in any botany that anyone has named that variety.

Mr. Mills—They are not worth paying any attention to; if cooked you would not know it was a cranberry if you had not picked it.

J. S. Harris—They seemed to fruit well

Mr. Mills—Yes, but they are not of any account.

Chas. Hirschinger—I would like to know what Mr. Hoxie means by our co-operation with the cranberry growers? Co-operation means "give and take."

Secretary—I had thought when we asked for a further appropriation that a provision might be made in that appropriation for the cranberry growers, but they have introduced a bill asking for an appropriation. Cranberry growing is really a branch of horticulture. In the matter of the exhibit at the World's Fair they come in under our auspices. They have some members in the legislature as well as we and I thought we could co-operate and help each other. I told Mr Braddock and Mr. Treat that we would do all in our power to aid them.

W. S. Braddock—I do not think it is necessary to give, in any stronger terms than has already been given, any statement with regard to our co-operation. We have worked very hard and we shall work and be just as willing to give as to take.

President—We ought to look upon this society as we did the florists or any part of horticulture. We should consider the cranberry growers as a part of the horticulturists. They all comprise the common interest of fruit growers in the state.

J. A. Dickman—Co-operation strikes me favorably and any man that wants ten acres of land on an island to experiment with I will give him the use of it. I will board the men free while they are cultivating the island and experimenting. I planted last year sixty-seven acres of cranberries. I am sorry to say there is less unamimity of opinion among cranberry growers than any class of men I know of. We are located within five miles of the railway at Babcock; we have a good amount of water; we are twenty-five miles from Grand Rapids and six miles from the Wisconsin river. If you do not believe there are islands there, go up with me and see them. We are eight miles from Dexterville and three miles from Vilas station.

A. L. Hatch—Are those islands dry land surrounded by marshes?

J. A. Dickman—Yes, and sometimes surrounded by water.

J. H. Treat—The bill we introduced asking for $250 was to help us to get some native varieties of our own or, in another sense of the word, to carry on an experiment station. That was the main object for the $250 appropriation.

Adjourned.

THURSDAY AFTERNOON, 2 o'clock.

ARBOR DAY IN THE SCHOOLS OF WISCONSIN.

F. A. HUTCHINS, Madison.

Arbor Day was first observed on the treeless plains of Nebraska. This was in 1872. In 1892 it was observed in nearly every state and territory of the union, and, in thirty eight of them, under the sanction of state law. This is not the limit of its extension as it is now recognized in many countries of Europe and even in South Africa. Surely there must be something of inspiration in a thought that has so quickly traversed the world—"that has taken the wings of the morning and flown to the uttermost parts of the earth."

Arbor Day has a practical aspect that appealed to the hard-headed business man and to the dullest farm-hand on the wind-swept Nebraska prairies, but there must have been more in it than the mere thought of shelter and timber growth to take captive the minds and hearts of boys and girls in the pine forests of Northern Wisconsin and of their mates in the orange groves of Florida.

This is a practical world, we say. Yes, it is a practical world, but, nevertheless it holds a warm place for poetry, music and art, for the enthusiasm and beauty of youth, for hope, courage, honor and truth, for the inspiration of kindly deeds and generous thoughts, for the love of nature and the kindling vision which sees the beauties of forests, field and sky.

In the wide range of oportunities which opens to those who would make life in the school and home richer and sweeter, Arbor Day is included as a most effective means.

Twenty years ago the sturdy pioneers of Nebraska gave the work of a spring day to procure direct personal benefits. In a few years people gathered at the schoolhouses to plant trees with a thought of benefiting future generations. It was but a step to the thought of better school homes, neat, attractive and beautiful school grounds, and, later, to the belief that boys and girls trained to delight in planting and caring for trees, shrubs and flowers at school would gain knowledge and inspiration to make their homes more cheerful and would go out into the world freighted with higher ideals and aspirations. Teachers have learned, by watching the quickening interest of children in nature, the truth that Agassiz saw so clearly that her secrets can be read only in the book that lies outspread under the open sky.

As Wisconsin, though slow in commencing to use the opportunities afforded by the new holiday, is now one of the leaders in its observance, and as much of the present activity is due to your society this is a fitting time and place to review the past and plan for the future.

In 1889, mainly at the solicitation of your secretary and associates from your ranks, the legislature of Wisconsin passed a law providing for the annual observance of Arbor Day. Little was done in that year or the next. In 1891 your society and the state superintendent made arrangements for joint effort to secure a general interest in the day. Governor Peck, with certain other friends of education, rendered effective aid by offering the sum of $1,000 to be distributed as prizes to one school in each county which should make the most comparative improvement in its grounds during the spring and summer. The department of education and your society united in sending circulars of instruction and encouragement to all of our schools. The response was prompt and gratifying. In fifty-six of the sixty-eight counties prizes were fairly won and, in most of them, after an active competition. The experience of 1891 proved that children are easily taught to love and to study plants and trees and to feel their refining influences; to appreciate beautiful school grounds and to enjoy keeping them clean and tidy. The success of the season's work led the department of education and your officers to strike out confidently on somewhat new lines in preparing plans for 1892.

Your president offered to give 6,000 strawberry plants to the children of district schools who should observe Arbor Day, organize district horticultural societies, set out and care for the plants at their homes and make two reports concerning them to your society during the year. In response to this offer 243 district horticultural societies were organized with 1,443 members, and your president honored drafts for 8,568 plants. Six plants of the best varieties were sent to each member of these societies with a circular of instruction in regard to planting and caring for them. Through the reports made by these widely scattered local societies to the department of education and to your officers it has been shown that these gifts were most effective agencies in broadening your work and in planting the seeds from which are springing a stronger and wider interest in horticulture. These youthful horticulturists have carried into hundreds of homes the first intelligent interest in the cultivation of gardens of small fruits, with their attendant mental, moral and material blessings. Your generous president now comes forward with an offer of 30,000 plants for a similar distribution in 1893, and the end is not yet. When we consider the remarkable indifference of the great majority of farmers to the culture of small fruits, and their apathy under previous efforts to awaken their interests, and then consider the results so quickly secured by Mr. Thayer's gifts, we seem to have only learned by a new illustration that we can reach the homes most surely by stirring the hearts and the imaginations of the children.

The circular which contained the details of this plant distribution also gave a list of trees, shrubs and vines recommended by your society for school and home grounds. The whole circular was incorporated with a larger circular published by the department of public instruction. This larger circular was really a pamphlet of considerable dimensions. It contained valuable articles by able specialists upon the preparation and care of lawns and flower beds, on school grounds, upon our common birds, their habits and usefulness upon our spring flowers and the best methods of studying them, upon the economic value and the refining influences of trees, with careful instructions relating to their planting and nurture. It culled from song and story, from the writing of famous scientists and essayists, choice passages to stir the minds and imaginations of young people; to incite them to study and enjoy the great out-of-door world then budding into the beauty of spring time. It urged upon teachers that Arbor Day should not be a spasmodic effort to teach pupils to plant trees but, rather, the culmination of days and weeks of alert and sympathetic study of Nature.

The enthusiasm aroused among the schools was a gratifying surprise even to the most sanguine friends of the movement Teachers and parents warmly testified to the ardor and zeal of the children in the studies outlined and in the work of beautifying their school homes. Hundreds of district schools were made more attractive and became object lessons for the passers by and for their neighbors. The official reports show that nearly every city and village school observed the day and that 2,408 district schools planted 18.343 trees.

The state department is now preparing a circular for the coming Arbor Day which will present some features which are new in this state. While it will retain, in a different form, those aspects of the work which enlisted the heartiest sympathy of teachers and pupils, it will endeavor to secure a special study of Wisconsin trees. In imitation of a plan that has been successfully tried in other states, it will ask the school children to choose a state tree. It is thought that the preliminary discussions and comparisons that will be caused by this selection will secure an unwonted scrutiny of our native trees. As an aid in this study an article will be presented on the geographical distribution of the most noteworthy trees that are found within our borders, and brief articles on the oak, white pine, elm, maple and basswood. There will be included a paper showing the extent of our Wisconsin industries which draw their materials from our forest and timber growth.

Much careful preliminary work to secure a heartier co-operation of county superintendents, teachers. pupils, school officers and citizens generally has already been done, and a wider and more intelligent interest in Arbor Day has been awakened than a year ago. If the friends of the movement will stand side by side in an earnest, active and persistent canvass, during the next three months, they can win from our schools and people in general an enthusiastic observance of this beautiful and inspiring holiday.

The schools needed the influence of the work which is associated with Arbor Day. In the old Scotch universities they laid much stress upon the teaching of what they called "the humanities," those studies that refine and ennoble human life and give broader and purer views. In our schools we need more of the humanities—more that will make for strong character, sweet lives, high and earnest purpose. Music and art, in their higher forms, are not available. Much of the dreary drudgery of the school room may, however, give place to two forms of inspirational study that are possible—literature, as represented in excellent books for children, and the study of nature. How the child's horizon expands, how his imagination springs into activity as he reads the deeds of heroes as told in the limpid prose of Hawthorne, or feels the thrill and music of the simple ballads of the classic writers. But the great book of Nature is everywhere before him. What marvelous tales she tells to the poorest boy who is touched with her magic influence and begins to read her stories. She lures him into the forest to read in an infinite variety of forms the wonderful adaptation of life to environment, the unerring application of law to all the forms which the mysterious thing we call life chooses for its expansion and development. She teaches him that in all the changing seasons, in all these countless structures, there are always new beauties of form, new wonders of construction, new mysteries of existence to be found and studied. That even in the dead rocks and soils there is a history of ages of ceaseless activity, since chaos first felt the guiding hand of the Creator, who has wrought from its simple elements a fit habitation for man.

Many of the primary advantages of Arbor Day, those which appealed to you as horticulturists and arborists, in securing the recognition of this beautiful holiday in Wisconsin, I have not dwelt upon. The reckless destruction of our great forests by axe and fire and the evils that must follow unless this loss is partly made good, have not been presented more fully because they are more familiar. The advantages offered by Arbor Day include these as important factors and should be recognized in the final summary.

This day and the preparation for it offer an opportunity to show the necessity of trees and forests to mitigate the rigors of our climate, to shelter from fierce winds, to hold the moisture of spring and wet seasons against months of heat and drouth, to make freshets less destructive, to purify the air by absorbing poisonous exhalations, to replenish the sources to meet our enormous demands for fuel and lumber, to protect the soil of the hillsides from washing into the valleys and seas, to train our youth not only as to the manner of planting trees but to enjoy planting and protecting them, to devote the barren hillsides, the highways and vacant places to these conservators of national prosperity.

Arbor Day gives the opportunity in the early spring to stimulate the study and enjoyment of all forms of out-of-door life, to lay the foundations of a deep and abiding enjoyment of the external world which will enrich thought and being, to study the great masters of expression whose writings are instinct with admiration of Nature and who have divined her choicest secrets and clothed their discoveries in daintiest phrase and song. It gives the opportunity and the inspiration to convert barren school houses into pleasant and cheery living rooms, to make of the desolate yards neat and attractive grounds with trees, flowers, lawns, and the varied adornments that make our best homes so delightful. It quickens and expands the mind and heart and sends the boys and girls out into the world with better ideals of life and of homes, and when we have elevated the homes of America we have enriched all that makes for national and private honor, prosperity and peace.

Daniel Huntley—I want to say just a word. I think we shall be made better for listening to such papers and I think the children will all be made better for following out the suggestions. Those people who said it would be of no use to put out flowers in school grounds have found out to the contrary. A lady came to me and said: "I will take those two climbing roses you have; it will be of no use to set them out in the school yard; they will only be destroyed." I said: "No; a carpenter has promised to make us some nice frames for these roses to climb on, and we are going to put them out and they will be cared for." And they have been taken care of. One touch of nature makes us all akin. If you can teach human sympathy to the child in the shrubs and trees, it will make us all better all around.

ORNAMENTAL TREE PLANTING FOR WISCONSIN.

W. D. BOYNTON, Shiocton.

We are a practical people, perhaps severely so, but for all that there is a widespread love of the beautiful, of the ornamental, in our natures. In no way is this love of the beautiful and the ornamental so nicely, so appropriately expressed as in the efforts of our people to aid nature in making beautiful the rough unsightly places. It tastefully expresses the natural and cultivated refinement of our people. While it is perhaps a material development, it is of that character which seems to redeem us from the severely practical materialism of the times.

The spir t or taste for ornamentation that finds its expresssion in this line of work is certainly of a much higher order than that which leads people to the adornment of the person; for the lowest, vainest savage leads in this desire, while the highest development of a people is marked by the beautiful surroundings which their intelligent efforts in harmonious action with nature have developed. The beautiful parks and grounds that are found in those communities of highest intelligence and refinement make good this assertion. The two conditions seem inseparable. We intuitively judge people by their surroundings.

I am proud to say that judged from this standpoint the people of Wisconsin rank high. We have reason to be proud of our beautiful state and to be proud of our people, who are showing so much taste, enterprise and refinement in beautifying their surroundings. Nature has done much for us: In the noble lakes that border us about, and that nestle inland among among our beautiful hills; in our undulating plains interspersed with pleasant woodlands; in the numberless springs, brooks and rivulets, which with the larger streams they unite to create, form a most magnificent water system not surpassed by that of any other state in the union. She has given us the noble forests which have made the name of Wisconsin famous. I repeat that nature has been generous in her gifts to us. She has indeed been lavish to this, the "New England of the Northwest."

Now comes the question which we, the recipients and guardians of these good things, must ask ourselves: Are we doing our share toward carrying out to completion the beautiful scheme of nature? In answer we may point with pride to our tastefully laid out cities and villages; to our beautifully arranged public and private grounds; to our numerous pleasant summer resorts that attract to them people from almost all corners of the earth. We indeed have much reason to be proud of our accomplishments in this line.

But there is a great deal that we have not done. The bleak and treeless burial place on many a lonely hillside, attests mutely and reproachfully to this fact; the bare and sunburnt school ground rises accusingly before us on every hand, reminding us of duties left unfulfilled Long stretches of roadway, unprotected and unadorned, lead from farm house to farm house, alas, many of which are as bleak, bare, and unprotected as the long dusty highway. We have done much, but there is still much to be done.

There is probably no one work that so adds to the beauty of our surroundings, as the judicious planting of ornamental trees. We have noted some of the many places that need this work; now comes the practical question of how to meet this want; how best to go about this work.

First, let us consider what we shall plant. The list that we *may* plant is quite an extensive one; but the list that we have practically found it advisable to plant, is not a long one. The following will cover the needs and most of the capacity of our latitude. Deciduous trees: Am. white elm, sugar maple, silver or soft maple, norway maple, ash-leaved maple, or box elder, linden, white birch, C. L. weeping birch, mountain ash, and horse chestnut. Evergreen trees: Scotch pine, Austrian pine, white pine, Norway spruce, blue spruce, arbor vitae, white cedar, red cedar, and balsam fir.

For street planting, we must, in the main, confine ourselves to the deciduous trees. It will be noticed that I placed the elm at the head of this list. I think that it properly belongs there. It is *the* tree of America. It lives in our histories, in our arts, and in the lines and verses of our honored writers and poets, many of whom now sleep the last long sleep under the arms of the tree they loved and praised. What can be grander than an avenue lined with noble elm trees? They are indeed admirably adapted to street planting. On strong deep soils they are very rank growers. In such locations they should be planted with due regard to the ultimate spread of top. 45 feet apart is none too far under such conditions. I have seen a 60 foot street completely covered with the interlacing boughs of the elms growing on either side. When planted along a narrow street like this, a system of top shortening should be established early in the life of the tree, to insure a compact head proportionate to the space at hand. Ordinarily I like to see the elm take its own free course in growing, but for obvious reasons it will not be advisable to completely shade a street as above described. Along a wide avenue, or in other roomy location, let it have its own generous, glorious growth. It will never be of an unsightly form or appearance. It is hard to find one that presents anything but a graceful, natural style of beauty. We do not expect regularity in form and top in the elm, as we do in the maple family for instance. We often see an elm with its top nearly all on one side, and still it is graceful and pleasing to the eye This can hardly be said of any other tree.

Of the maple family the hard or sugar maple undoubtedly takes the lead. It is indeed a fine tree. It is long lived and enduring, but of somewhat slow growth. The Norway maple, of comparatively recent introduction in this country, is coming into favor as a street and lawn tree. It is also of slow growth, but takes on a fine, compact form. The soft maple is of rapid growth but requires much trimming and attention to make it take on anything like a close, compact form. It is also easily split down and damaged by winds and other violent causes. In sheltered locations such as will generally be found in our towns and villages, this latter point will not generally have to be considered. It is being planted to quite an extent.

The ash-leaved maple, or box elder is a tough, scrubby little tree whose chief merit lies in these very qualities. It will thrive under the most unfavorable conditions, and while there is nothing stately or beautiful about it, makes a very fair street tree. The linden or basswood is coming into favor as an ornamental tree. Its broad leaves and pulpy appearance, give it something of the air of a tropical tree. It is hardy and of rapid growth.

Trees that are to be planted along the street should have a pretty long bole or stem free from branches, that the view of the street may not be obstructed. We should plan for at least a ten foot stem. Do not make the mistake of planting too thickly. This is too often done. It is much better to have two or three well developed trees in front of a residence lot, than to have half a dozen crowded in 12 or 15 feet apart, as we frequently see them. If trees of over three inches in diameter at collar are to be planted, they should be planted in winter when they may be moved with a frozen ball of earth, which will generally insure success.

For lawn and park planting I would allow trees to take as natural a form in growing as is possible, or compatable with neatness and order. All the trees named, both deciduous and evergreen are available here. The birches and particularly the cut-leaved, weeping birch, are fine for lawn planting. The mountain ash, and the horse chestnut are also excellent. Amomg the Evergreens, the balsam fir and the spruces make fine single specimens, while the different varieties of pines, arbor-vitaes and cedars, are just the thing for grouping. I think that the finest effect is had from evergreens by thus grouping them for backgrounds. It is not a difficult matter to secure beautiful groups, while it *is* a difficult matter to secure fine single specimens, and keep them so.

Along country roadways, we may use nearly all trees named, both deciduous and evergreen, and we might as well add to them many varieties of fruit and nut trees, which would combine usefulness with ornament. It seems to me the general planting of these fruit and nut trees along roadways is most commendable as praticed in many of the European countries. It betokens a spontaneous generosity and good will towards all the public that is delightfully refreshing in this day and age. Why should not the waste space along our thousand of miles of highways be made beautiful and useful at the same time?

COUNTRY CEMETERIES.

Almost every township owns its little cemetery site. Some of these are well-ordered and nicely kept, but so far as my observation goes, the great majority are much in need of attention. If any place should be made beautiful, it would seem that it should be this place where we lay our loved ones away to their last long rest. If the faithful love and remembrance of a people is to be gauged by the appearance and condition of these burial places, some of our country communities must be sadly lacking in this respect. Would it not be an excellent plan for our local horticultural societies to take hold of this matter and endeavor to arouse at their public meetings and elsewhere, a better sentiment in their respective communities, and also to take practical steps toward the beautifying and putting in order of these grounds?

The following is an excellent list of trees for cemetery planting: Cut-leaved weeping birch, common white birch, purple leaved beech, camperdown weeping elm, kilmarnock weeping willow, here and there an American white elm, where there is plenty of room, and nearly all the evergreen varieties named in this paper. The evergreens of coarser growth must be kept closely trimmed and to some extent dwarfed for this purpose, with here and there a group growing naturally. The Norway spruce is least desirable for this purpose, on account of its usually taking on a ragged and coarse appearance in advanced life.

PLANTING OF SCHOOL GROUNDS.

Here again we find the country districts, where there are all the means at hand for the lavish planting of trees, deplorably negligent in this work. Very few of our country school grounds are well laid out and planted with trees. There has lately been a commendable move made by our state department of public instruction toward the more general effective observance of Arbor Day in our public schools. Considerable enthusiasm has been aroused and we may confidently expect to see much better work done in the future than has been done in the past. The greatest drawback in the practical prosecution of this work is the great lack of skill and knowledge requisite for successful results. Our faithful school maams and their enthusiastic little helpers go at the work with the very best intentions, but with very weak and inexperienced hands, and with but little judgment as to the varieties to plant, specimens to select and general method of handling. At least one experienced man in each school district should take hold and help the good work along by his practical knowledge and more sturdy hands.

Here again we may use nearly all the deciduous trees listed in this paper and some of the evergreens. These latter may be used to advantage for tall screens and groups around and about the out-buildings. It will be found very difficult, if not impracticable, to grow fine single specimens of evergreens in school grounds, owing to the rough usage they will meet with.

ADORNMENT OF RAILWAY GROUNDS.

And last of all I want to ask the people of this state if it is not about time that we urged upon the railroad people the desirability of doing something toward the ornamentation of their own grounds to somewhat offset the havoc they have made with the grounds of others. They have certainly done, not wantonly or unnecessarily to be sure, much to mar the beauty of our state, as well as to cut up some of our finest grounds in country, city and village. It seems to me that the least they can do to offset this is to systematically set about beautifying their own grounds wherever practicable by the judicious planting of ornamental trees, shrubs and flowers. This is being done by some of the large eastern roads with excellent effect, more particularly through the states of Ohio, Pennsylvania and New York, and I see no reason why our western roads may not be prevailed upon to take hold of the work. It is to be hoped that the influence of this society will be faithfully and continuously exerted to bring about this agreeable innovation in our state of Wisconsin.

DISCUSSION.

J. S. Harris—Can the cut leaf birch be propagated from seed?

W. D. Boynton—I see no reason why it cannot be. I am going to try it.

J. L. Fisk—Cut leaf birch has never been grown from the seed except in France.

Daniel Huntley—I suggest that there be one more qualification in the examinations of our teachers; there is all the difference in the world between a teacher that is educated and one that is ignorant.

A. L. Hatch—There is one practical question I want to talk about· It has been stated that it would not do to trim the limbs from the forest trees when transplanting them. I am fully satisfied that it is a better way to remove the limbs; they will form a more symmetrical top than if the limbs were left on. There is also a limit to which trees from the forest should be removed. When trees are two or two and one half inches through it is not safe to transplant them. What is the best way Mr. Tuttle, to take all the limbs off from trees that we wish to set in the park or wayside or leave part of them?

A. G. Tuttle—I should take them most all off.

W. D. Boynton—I think there are two points that should be taken into consideration in transplanting trees: Take up in the winter, and have a good sized ball of earth on the roots. I noticed a large elm tree in Chicago that was removed last winter that was in full leaf. If your tree is taken from a half open space where they have a chance to get a better top, you will not have to mutilate the tree so much.

J. S. Harris—It will do to cut an elm off so as to leave a mere stump and it will go on and form a nice top. In my experience in planting trees, and I have had some, I would prefer a top that was in proportion to the roots.

A. G. Tuttle—The railroads cannot do much in the way of planting and ornamenting their grounds. They are doing a great deal to damage the timber in the state. Young timber is being set on fire by the railroads and they burn the whole thing over; they are doing more to destroy the timber of Wisconsin than all the cutting that is done. Men that owned marshes along the line of the railway had to stay during the dry season and watch their marshes. My son had a cranberry marsh that was all burned out by them.

A. L. Hatch—Perhaps those who have never been in the pine region have little idea of the devastation caused by these fires. The fertility of 500 years was destroyed in a day. Men tell me they cannot raise a crop the first year on that land after it has been burned over. A man told me he planted fifteen bushels of potatoes and never got a potato; he planted corn and did not get his seed back.

A. G. Tuttle—It is undoubtedly the fires that prevent the growth of young trees.

Report of committee on Ornamental Trees and Shrubs presented and adopted.

NOMENCLATURE AND CATALOGUE.

J. S. HARRIS, La Crescent, Minnesota.

Mr. President and members of Wisconsin State Horticultural society: We have on former occasions spoken of the importance of having a correct nomenclature for our fruit and it seems to us to be an essential part of the work of this society to establish correct names for the many varieties of fruit which come before us for discussion, examination and adoption. Without correct nomenclature we cannot possibly guard our planters from being continually imposed upon and misled. The reputation of fine varieties is liable to be seriously damaged, their successful introduction and culture retarded, and the business of the planter and grower attended with confusion and loss.

So little knowledge have a large per cent. of our farmers of the merits of fruits by their names that the sharp agent has them at an advantage; they would purchase a wealthy under the name of Ben. Davis, as quick as any other, if he told them that was the name of the sample. We have known the most insignificant crabs sold and planted for Tetofski because the agent called his specimen fruit of that variety, Russian crab.

We have found, through our attendance at fruit exhibitions and by visits among fruit growers, that a great confusion exists with regard to the names of varieties even among those who ought to be reasonably well informed about them, and with the new Russian varieties it is almost chaotic. The evil is with us; it is too late to prevent it, but we should endeavor as fast as possible to correct it or disasters will continue to follow.

In no place is this condition of things more annoying than in competitive exhibits, where, to save money and encourage honest competition, every variety for which prizes are offered should be correctly named and so carefully described that awarding commit ees may be able to make just awards. At some of the county fairs scarcely one-half of the varieties are correctly named, and the result is the educational influence of the exhibit is lost. At one fair last fall we saw the Wealthy entered as "Duchess" and "Unknown;" the Utter as "Walbridge" and "Plumb's Cider;" the Plumb's Cider as "Walbridge" and "Ben Davis;" Tallman Sweet as "Golden Russet," and several others after the same style. In some instances the growers were very greatly disappointed because they might have drawn prizes if they had entered their apples true to name. Doubtless there was no intention on their part of wrong, but it would astonish you to see how some of the exhibitors will insist that the name is correct, providing it is found in the premium list and no other person has entered for it.

It frequently occurs that the farmer is confused in names by the traveling tree peddler who discovers an opportunity to duplicate his favorites with some worthless trash he is selling.

Many people, who are not familiar with the varieties of fruit, take advantage of the opportunity afforded them at the fairs to make out lists of varieties they wish to plant, hence it is doubly important that all good varieties be true to name, for the reason that nurseryman of whom they order trees will usually send what the order calls for and then disappointments are sure to follow. In view of these things we urge that, in the future, every variety, which comes before this society to be recommended for cultivation or trial in any section of the state, shall be catalogued and plainly described; also that all other varieties being grown in the state, including new Russians and all new seedlings of promise, as fast as the true name can be ascertained, be catalogued and described, giving the size, form, color, season and comparative hardiness of the tree, taking the Oldenburg as a standard; also their value for dessert, cooking and market, using numbers from one to ten as far as practical, ten to denote perfection. We recommend that this be done as a means for educating and protecting the planter.

Observations of the past season have led us to form the opinion that there are a number of varieties of the new Russians destined to play a conspicuous part in our pomology and a persistent effort should be made to sift out the most valuable sorts and learn their correct names.

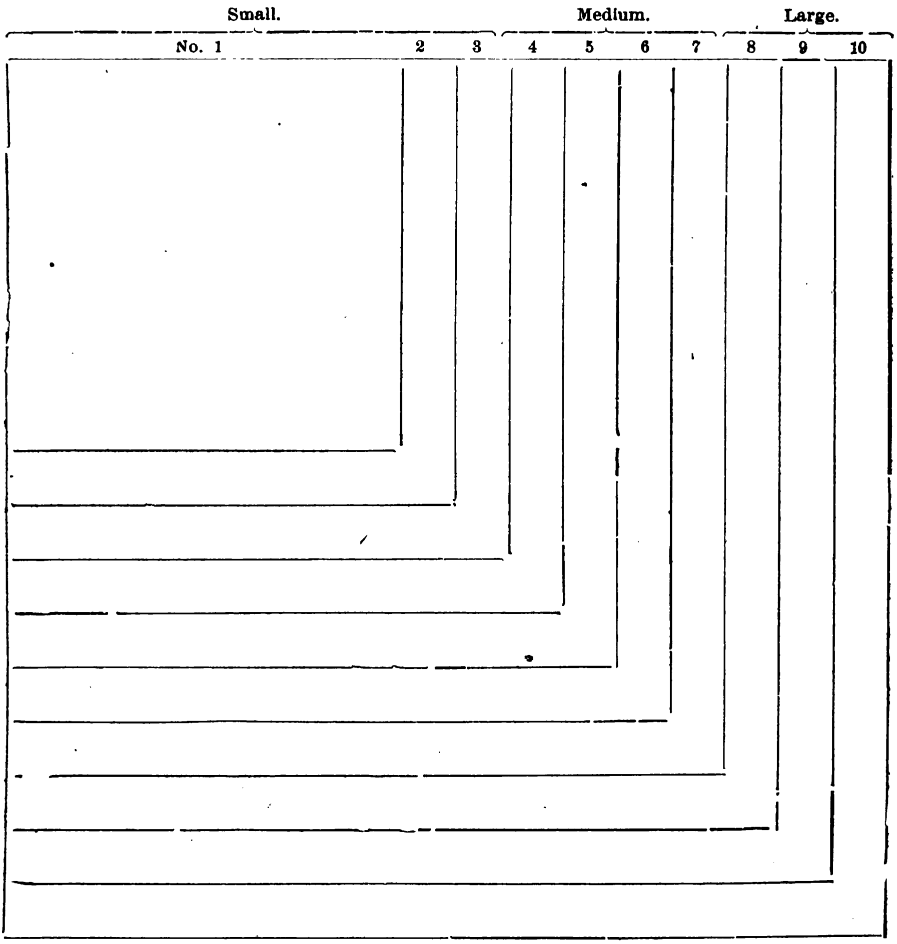
If there has not been a half dozen varieties made out of the Oldenburg, there is certainly that number under different names that are so nearly alike that no planter would want more than one or two of them. We would suggest keeping the best two varieties of these apples that differ most, and discard the remainder or put them into one batch and propagate them as Oldenburg. The man who wants only six varieties will then be protected from planting thirty of the same kind under different names. The same is true of some other varieties. The Hibernal, Lieby, Recumbent, and Ostrekoff's Glass are so nearly identical that but one ought to be retained.

A mistake was made in the form of a scale presented in our last report for determing the size of apples by numbers, the square numbered being one-fourth inch too large. No. 1 should be exactly two inches square, and each additional number one-fourth of an inch larger. This scale is being received with favor, and we recommend that it appear in the forthcoming transactions. We also submit for approval a form of catalogue.

The following abbreviations are used in the description of apples.

Form.		Color.	
r.	roundish.	y.	yellow.
r. c.	roundish conical.	y. r.	yellow and red.
r. ov.	round ovate.	g. y.	greenish yellow.
f. c.	flatish conical.	r. s.	red striped.
f. r. or r. ob.	round oborate or flatish round.	rus.	russet.

In this form for determining the size of apples, No. 1, must be exactly two inches square and each additional number one fourth of an inch larger, so that the outside line of No 10 will form an exact square of four inches and one-eighth.



The paper, catalogue and scale for determing size of apples were accepted and a vote of thanks given Mr. Harris for presenting them

THURSDAY EVENING.
Assembly Chamber.

WHAT IS FORESTRY?

A paper read before the Wisconsin State Horticultural Society in Madison, Feb. 8, 1893.

By B. S. HOXIE.

The earliest settlements in this country were made in the woods and the most important thing to do was to cut down the forests and burn up the wood, as the first requisite to prepare the ground for a crop.

And indeed within the memory and on the home farm of some in this presence "logging bees" were scenes of no unusual occurance 'Boys, we must clear the farm." The heavy timber country and the slow increase of our population made this mode of procedure in the early days the only method to subdue the earth. Except for the wants of settlers in limited areas, there was no market for timber or lumber of any kind. But in later years with the rapid increase of our population the settlements pushed on west until the treeless plains were encountered in Illinois and Wisconsin, and to some the question occurred, will there ever be a dearth of timber? Lumbering forty and fifty years ago began to be an important industry in Eastern and New England states. Maine, New Hampshire and Pennsylvania were then the scenes of the greatest activity. But westward ho! and Michigan, Wisconsin and Minnesota with their vast forests of pine began to yield up the wealth of two hundred years of accumulated growth of timber. The older states by this time, had ceased to yield a profitable supply to large working companies. The rapid increase of our population and mainly in portions of our country, remote from the supply of building material, has made of late years the lumber interest one of our most important industries, until now it is estimated that the *annual* product of wood material of all sorts consumed in the United States may by valued in round numbers at $1,000,000,000, representing about 25,000,000,000 cubic feet of wood, or the annual increase of the wood growth of 500,000,000 acres of forest in fair condition of growth. We speak of the products of our mines; the value of our wheat and other crops, but they are of minor import compared to the value of our annual crop of timber products.

This value exceeds ten times that of all our silver and gold output, three times that of our mineral and coal mines put together, and three times that of our vast wheat crop with all the cost of its production added. Now, I am no alarmist, though I have the statistics at hand to verify all the facts hinted at by way of introduction to my subject of *Forestry*. The love of trees is an inherent principal of my nature—they seem to me so much like human beings, and what can add more to our happiness and life enjoyment than the products of the garden and forest.

There are some who seem to think that in our country, at least, there is, nor never will be, a lack for wood or timber for our, or future generations, and by way of argument cite the rapid growth of young timber on their own farms. If I had the time I would show, by carefully collected facts from the areas of timber supplies, that this supply is rapidly and constantly decreasing.

THE AMERICAN FORESTRY CONGRESS.

What is it, and what are its objects? Many have a misconception of its work and aims. Let me say then that this association or congress was organized in Cincinnatti, Ohio, ten years ago last April. Its aim is to promote a more rational and conservative treatment of the forest resources of this continent and the extension of forest growth wherever for climatic or other reasons such seems desirable. It, therefore, invites owners of timber and wood lands especially, to join its ranks for their own benefit.

The association has no desire to prevent the legitimate use of forest growth, but desires that it be judiciously managed so as to improve and increase its value.

It was the wanton destruction of wood growth and forest material which called this society into existence. It considered that a sufficient supply of home grown wood material was desirable in the household of a nation; that the forest cover on hillsides and mountain slopes has an important relation to even water flow and favorable soil conditions. It recognized the fact that climatic conditions were ameliorated by timber belts. From data and accumulated facts from private sources and government reports of France, Austria and Germany it was shown that none agricultural lands could be made sources of great income to the state under forest culture.

About $40,000,000 is paid every year in Germany for the creation and preservation of forests; 200,000 families are supported from them, while something like 3,000,000 find employment in the various wood industries of the empire. The total revenue from the forests amounts to $14,500,000 and the current expenses are $8,500,000.

The best argument to arrest public thought, or awaken interest in any enterprise in our country at least, is the argument which appeals to the pocket. If it can be made to appear that we are to be benefitted financially by a certain course of action, we will then the more readily take up the line of work pointed out by our friend or advisor. Then if individual owners of land, or our national government can see that there is a necessity for tree planting or forest protection, be the same in private or on our public domain, it will be done.

I have mentioned the American Forestry Congress but besides this, Pennsylvania, Ohio, Michigan and Minnesota have each Forestry Associations, while a number of other states have lately passed laws having for their object the preservation of the timber of the public domain, and also invite private owners of timber lands, to cooperate with and act in harmony with this legislation in reforesting waste and unproductive lands. Some of the owners of the largest tracts of timber lands in the state of Maine several years ago saw the necessity of preserving the forest growth. Stringent laws were passed by the legislature regarding fires and the lumbermen and land owners were interested in the enforcement of these laws. These lands void of the timber were in most cases worthless for agricultural purposes so the only resource was to let nature do the reforesting only give it a fair chance Some of these lands thus protected for twenty years or more are now yielding fair returns to the lumbermen. This is not, however, like the original growth of white pine which took two hundred years to produce, for in many instances a hardwood growth has taken the place of the pine of the primeval forest. There are, however, thousands of acres of second growth pine which is producing timber of good fair quality for packing cases, and their manufacture is now quite an important industry in that state. Perhaps one of the most noted instances of tree planting on barren and otherwise worthless land is on Long Island Sound where various tracts from four to seven hundred acres, comprising in all over three thousand acres have been planted to coniferous trees This land twenty five years ago, was mainly a sand barren, with here and there some scrub oaks, but now dense forests of trees fifty or sixty feet tall, and much of it already fit to use for building material.

Trees planted in Nebraska, Kansas and in Southern Dakota ten and fifteen years ago, even in small farm plantations, are now yielding wood and timber sufficient for all domestic purposes, besides the other quite important consideration of wind breaks I could enumerate personal cases giving all the facts in detail were it necessary to the objects of this paper.

It has been asserted, and facts seem to warrant the conclusion, that denuding a county of its timber has a tendency to dry up its springs and rivers, and thus make a barren waste where once were fertile fields. The land of Palestine was once, certainly a fertile country, but for centuries has been barren and unfruitful.

It is certain that taking the timber from hillsides and mountains causes washouts and gullies, carrying away the soil accumulation of ages and causing torrents and floods, which to a great extent could be held back by the forest floor of roots and underbrush. It has been also asserted that the terrible floods of the Ohio in late years are the result of this unwise deforesting of the timber lands. In France now the government is replanting at great expense mountains and hillsides which years ago were denuded of timber. In many instances this land is either confiscated or paid for and thus brought under government control. Men skilled in forestry are appointed to do this work, and foresters are also appointed to take charge of all forest or wooded lands, and trees and timber are cut and disposed of under restrictions which pay a revenue to the government. France, Germany and Austria have schools of forestry where men are taght in all branches pertaining to arbor culture and forestry.

In our own country it is not yet necessary to plant, perhaps, but it is necessary to preserve and give nature a chance to do her own planting. And yet it is possible that we have millions on millions of acres of worthless barren land which might be planted to coniferous trees. This might be done to some extent by private individuals, as I have mentioned in the plantation on Long Island, and for this purpose the land should be given outright without fee or limitation, except that of planting trees. We have many thousand acres in our own state of sandy, barren land only fit to plant this variety of trees on.

It may be a question which needs greater confirmation whether large forests increase rainfall, but it is certain that they con serve it and arrest the rapid evaporation and hold as a reservoir the rain and melting snows which supply the sources of our rivers.

The irrigating system now so highly prized in Idaho, Wyoming and Colorado depend for the water supply from rivers having their source in the mountains covered with timber, and it is none too early for our national government to adopt measures to preserve this from destruction. Perhaps the most immediate destruction at the present time is caused by forest fires which in many cases could be prevented by more strict legislation and sure punishment to the parties setting fires. Thousands of acres are burned over every year in the Rocky Mountain regions destroying every vestage of tree or plant life. The Indians are not the only ones who set these fires, but white men and hunting parties are guilty of this wanton destruction of our nation's wealth.

STATE AND NATIONAL PARKS.

One other thing as relating to my subject is that of state and national parks. By an act of congress, approved March 3d, 1891, the president has created, by proclamation, six reserves for public parks or forests making in area 3,252,260 acres. The public parks of the United States now under control of the interior department are the Yellowstone National Park, the Yosemite National Park, the Sequoid National Park, U. S. Grant National Park and the Hot Springs Reservation in Arkansas. These parks, except the one in Arkansas, are under guard of soldiers detailed from the army and are well protected from despoilation and are increasing in beauty and attractiveness every year as pleasure resorts, except, perhaps, the Yosemite Valley. This is controlled by California and has been leased to a company for a term of years who, like the owners of the great Mammoth Cave of Kentucky, want to make the most money out of it for the least expenditure and to visit it one is hedged about with such restrictions that one-half the enjoyment must be lost. The Sequoid and General Grant National Parks have been used heretofore by ranch men and cattle hearders who cared not for any beauty of the natural scenery and used to destruction anything to serve their purpose.

This of course will now be stopped under the legal protection.

Last June Mr. Paddock in the senate of the United States introduced a bill with this significant title, "A bill to provide for the establishment, protection and administration of public forests reservations and other purposes." This bill was referred to the committee on Agriculture and Forestry and reported with amendments July 1st, 1892.

I will just quote some of the objects of this bill not touching its provisions in detail.

The first is, that the president of the United States, as soon as practicable after the passage of the act, shall cause an examination to be made by districts, of all public lands bearing forests, and all lands wholly or in part covered with timber or undergrowth whether of commercial value or not, in all the states and territories, and required to be filed complete lists of such lands in the general land office. When such examination and lists are completed the president shall, by public proclamation withdraw and set apart all of said lands—except such as may be considered more valuable for agricultural purposes - for forest reservations and declare the establishment of such reservations and their limits.

Section 3 of the act reads, That the object of the forest reservations shall be to protect and improve the forest cover within the reservations for the purpose of securing favorable conditions of waterflow, and *continuous* supplies of timber to the people of the districts within which the reservations are situated.

Besides these national parks some of the states have reservations of the public domain which in most cases need more careful watching under the charge of competent men outside of political favor.

The famrus Adriondac forest in the state of New York on the head waters of the Hudson, has for years been the summer resort of tourists and pleasure seekers.

This tract of land could have been purchased by the state three years ago from the heirs of the original owners for comparatively a nominal sum. It is now, however, too late, as a syndicate of capitalists have bought it for private speculation. Much of this tract has been despoiled of its original beauty and a lease which has fifteen years yet to run, given before the present owners came into possession, gives the contractors the right to cut and take away all of certain kinds of timber of a specified size. This in a very large degree prevents the owners from making improvements which they otherwise would in order to restore it to primeval beauty in parts unfit for arable purposes. I wish here to give a quotation from an editorial in *Garden and Forest* by Prof. C. S. Sargent, and what he says of this forest will apply with equal force to other timber sheds in other localitie : "The destruction of the North woods will produce a change in the flow of the principal rivers of the state and in the water supply of the Erie Canal, which will cause wide-spread disaster to the interests of the people. There will be uncontrollable freshets at the times of heaviest rainfall and when the snow melts in the spring; the channels of the rivers will be choked by debris brought down from the hills; and in the summer when a full volume of water is most needed the flow will be insignificant. If this ruin is consummated it will be a most serious blow to the prosperity of the state and of all classes of its people. No less important is the value of the region in its relation to the health and life of the people of the country as a place of resort for the inhabitants of the towns and for all who need the restorative and vitalizing atmosphere and influences of a region of sylvan beauty and peace. As our population becomes more dense, the need and value of wild, rough tracts incapable of cultivation will be greatly increased.

"If the forests are destroyed the entire charm and attractiveness of the region will be eliminated, and a scene of hideous desolation will be substituted which no one will ever wish to look upon."

Our own state set apart a few years ago several townships of land in what was then Lincoln county, now Oneida, for the purpose of a state park, which was forever to be used for that purpose.

The act setting apart lands in our own state for a public park is as follows:

CHAPTER 324, LAWS OF 1878.

AN ACT to provide for a state park in the State of Wisconsin.

The people of the State of Wisconsin, represented in senate and assembly, do enact as follows:

SEC. 1. All lands belonging to the State of Wisconsin, lying in township 40, 41, 42, 43, 44, north of range 4, 5, 6, 7 and 8, east of the principle meridian in the State of Wisconsin, is hereby dedicated and set apart for a state park, and no such lands not now sold or contracted to be sold, shall hereafter be sold, nor shall any privaleges, license or authority be given to any person or persons whomsoever, to cut down or destroy any timber growing on such lands.

This act shall take effect from and after its passage.

Approved, March 20, 1878.

This trust should be kept in violate by the state. I am told that this tract presents bold and rugged scenery, dotted with small lakes and trout streams and altogether an inviting place for the summer pleasure parties, who wish to enjoy an outing without being trespassers on private property.

We do not see the value of these wild spots of nature as our posterity will fifty years from now when they will be almost ready to curse the improvident prodigality of the fathers, who for a small pittance in money destroyed God's everlasting heritage of beauty and denied it to their children.

The large increase of the consumption of timber is out of proportion to the increase of its growth, but this need not be if proper laws were enacted and enforced with regard to its conservation; except perhaps in certain kinds of wood.

Indiana, once almost entirely and heavily wooded, is now like Ohio largely denuded. It has taken less than fifty years to reduce the woodland area below twenty per cent.

The valuable hard woods of Indiana, especially its oaks, hickories and walnuts, were unequaled in quantity and size and have given rise to wood working industries in the state, which in 1886 produced more than $30,000,000 worth of manufactures.

At present walnut and popular are practically gone; white oak is rapidly diminishing and growing poorer in quality and the virgin growth is everywhere culled of its best timber. Over a half million acres of this are wasted lands only fit to grow timber.

It is a well-known fact that timber trees of the common white pine, which are at their best in our state, are from 150 to 200 years old, and this quality of timber is fast receding before the woodman's ax and the lumberman's saw.

The three great lumber states are now eating up their forests at a rate which will soon kill the goose that lays the golden eggs. The value of their lumber products last year was $167,237,816, and at the present rate of consumption their forests will last about five years longer. When the lumbering industry has eaten up the forests of the South in the same way the country will either have to wait for new trees to grow or find a substitute for lumber.

Black walnut so common twenty years ago became so scarce that the use of it had to be discarded almost entirely for commercial purposes. The poplar or white wood is going the same w y, and this, too, in a few years will become extinct as it is found only in small areas of our country.

It was only a few years ago when the lumbering interests of our state drew its supply from the vicinity of Green Bay and the middle portion of our state, but it is now mainly cut in the northern counties at much greater expense than formerly, and I have sometimes thought it would be a fine thing for us to admit lumber and timber duty free and let our Canadian brethren sell to us while ours could be left to grow. But as I have intimated there is too much money in timber at the present time and I may as well add for all time to let commercial forests remain.

The cutting down of the forests is not the worst feature in the way of future supply of our timber, it is the utter neglect to preserve the forest floor so that other growths may take its place and for more stringent laws in relation to forest fires which every year in our state as well as in others destroy the young growth and burn up the forest floor—the accumulation of ages—in many instances down to the sand or gravel bed making it bald and sterile for ages more before vegetation of any kind can exist.

No one who is all posted, or who has examined the statistics relating to the timber area of our country, its supply of the various kinds used, and the enormous yearly consumption, will deny the fact of the rapid decrease for commercial purposes. Our own state is comparatively new and considerable of its forest area is in its primitive condition and it is not too early to arrest public thought on this question. This then is my only excuse for introducing this subject at our convention.

And I hope at this present time, or at an early day, those interested will form an association, not to prevent the legitimate use of the forest growth, but to preserve it and recognize the fact that it is a crop to be utilized and judiciously managed. Let this association collect and disseminate information relative to tree planting and forest conservation within the boundaries of our own commonwealth.

THE FORESTS OF WISCONSIN.

HON. BY H. C. PUTNAM, of Eau Claire, Wis.

Covering originally over one-half of its area of 35,000,000 acres, should be a familiar subject to most of its citizens. To the general knowledge I do not expect to add much at this meeting. I did not expect to prepare a paper. When your secretary, Hoxie, asked me to do so, I said: "If able to be present will give your society a talk and show a map." I expected simply to meet you in your horticultural rooms and not in this assembly hall of our legislature. However, if our law makers recognize the aroma of the forest and the gardens it will not be unfamiliar.

Having spent some time in 1880–81 on a report to the government, and having made up this report from an intimate acquaintance of said forests as surveyor, civil engineer, etc., in its midst from 1855 to that time, I shall quote from that report, as the figures were pretty carefully made at the time (you will find the same substantially in the census of 1880 in the forest report made up by me included in the forestry report of the United States). As an object lesson I show the map I made then of forest area of Wisconsin, also map of same of the United States.

For 1880 the white pine of Wisconsin was distributed over the 20,000,000 to 25,000,000 acres of its northern half as follows. I show it in watersheds or basins of streams, to wit:

1. Basin of St. Croix, over some 2,000,000 acres, 2,500,000,000 feet.
2. Basin of Chippewa and tributaries, over some 6,000,000 acres, 15,000,000,000 feet.
3. Basin of Black river, over some 1,000,000 acres, 900,000,000 feet.
4. Basin of Wisconsin river, over some 4,500,000 acres, 10,000,000,000 feet.
5. Basin of Wolf river, 600,000,000 feet.
6. Basin of Oconto river, 500,000,000 feet.
7. Basin of Peshtigo river, 1,500,000,000 feet.
8. Basin of Menomonie river, 6,400,000,000 feet.
9. Basin on slope south shore of Lake Superior in Wisconsin, 3,600,000,000 feet.

A grand total of some 41,000,000,000 feet of standing pine.

At that time had we placed a value upon the 41,000,000,000 feet, we should have said about $125,000,000. Within the ten years we have cut from said forest at least 30,000,000,000 feet. You will see (later on) the value of what is left. In 1880 other forest products, such as hemlock, cedar, spruce and the hard woods, were not estimated. We did not realize their value as now.

It was a new thing in the United States or government census to show forest areas and estimates of timber of economic value on a map I knew the value of such a showing, and made the first map and estimates for the commissioner of census of 1880. Get that volume of census '80 and read the same and examine maps therein of forest report. We have given the estimate of some twelve years since 1880. We then estimated pine timber to about 12 inches in diameter 24 feet up from the stump, which was about as we were cutting pine then, and the amount was as stated—41,000,000,000 feet for Wisconsin. Of this amount there has been cut since 1880 some 30,000,000,000 to 35,000,000,000 feet. Now we are cutting pine down to 7 and 8 inches instead of 12 inches as in 1880. There is much small timber standing among the pine not then estimated, and tracts of small pine not estimated at all then, as not considered merchantable, that would make the estimate now of amount still standing in the state at about 25,000,000,000, possibly 30,000,000,000 feet, and its value thus standing I put at $150,000,000. It will cost on an average $3 to $3.50 per 1,000 feet to cut and haul this to the driving streams or to mills near the timber, also an average cost of $1 per 1,000 feet to drive or float the same to mills farther down the stream to be sawed, and some $2.50 per 1,000 feet sawing and added expense at the mills before the lumber is ready for market. If the mills that saw it are in the state, we have say $3 50 for cutting and hauling, $1 for driving or railread hauling, $2.50 for sawing—some $7 per 1,000 feet on $30,000,000,000 feet is $210,000,000 in labor. At $1 a day for two-thirds of the year for the next ten years, it would require 100,000 men to work ten years to cut this timber, and I believe I am way below the actual figures on the labor amounts.

You can see what this means for the state, what it would mean if all this pine could be manufactured within the state, unfortunately for the state however, for the past fifteen or twenty years a very large proportion of the pine so cut has been driven out of the state and manufactured at towns in Iowa, Minnesota, Illinois, floated down our rivers, the St. Croix, Chippewa and other driving streams, and its manufacture has helped build up the Winonas, Davenports, Rock Islands and other Mississippi river cities and towns, and we Badgers have seen our magnificent forests of pine cut down and floated away, to enrichen other states. Fortunately this has been checked to some extent, our sister state Minnesota is now furnishing some of the down river mills, and the lumbermen are "letting up" a little on Wisconsin forests.

Next comes the hard wood forests, and as the oaks, birches, maples and elms do not float well we shall have the benefit of their manufacture in the state. Of this timber we have some fifteen billion feet, its value say $75,000,000 to $100,000,000. Next comes the hemlock timber, ten to twenty billion feet, so far its value has not been appreciated. When we know that after crossing the Mississippi and St. Croix rivers and the western boundary of Wisconsin we have no more hemlock, none in Minnesota, a little in the Rocky Mountains of Idaho and eastern Washington, but with very little bark, and timber too defective to be of any value, and a little (not very much) in the Pacific coast forests. So that with its disappearance in New York and Pennsylvania, the next move of the tanners must be to this state. It's difficult to estimate its value. The factories of bark for tanning and the peeled trees for lumber (being nearly equal to pine) are important ones. So much so that considering our forests of hard wood and hemlock now standing of more value than shall have been had from the pines. Wisconsin has the only large hemlock forest in the United States. Cedar and spruce swamps of over one million acres are also valuable.

I am now going to propose something that is new. I advised it more than ten years ago, to-wit: The State of Wisconsin still owns over 600,000 acres in its forest area. Most of it covered with timber of some kind, much of it valuable as a forest. It will cost the state nothing for taxes or to carry the same. I, therefore, advise and recommend the absolute withdrawal from sale of said lands and that they be held as a forest, owned by the state, held for the school fund until value ap preciates or is better known than now. The expense to the state of careing for lands would not be much. Each county would be interested in their protection as it is for their future good, and if timber had to be sold from any part, let it be estimated and sold for value, reserving the fee in lands unless they are agricultural lands and wanted by actual settlers.

This will be in the interest of the preservation of the Wisconsin forest, and in the line of the best interest of the state and the public schools. We need not refer to the vast amounts of rich school endowment originally held by our state in the shape of timber lands that have been wasted. We need only compare the management of the millions of acres of school lands originally owned by our state, with the management of almost any private land or school and university land fund, to-wit: Take the Cornell university of New York, you all know it is one of our best schools, and its endowment ample at low figures. In 1865 6–7, I purchased from the government for said university 500,000 acres in this state mostly in the forest. Total cost of land and location and all expenses was under $500,000. Land was for sale by the government, if the C. U. did not buy it some other purchasers outside of the state would. The C. U. has paid heavy taxes to the state while owning it, and has received an endowment from said land, I understand, of some $5,000,000 or $6,000,000. Wisconsin had at that time (some twenty-five or thirty years ago) several million acres (with no tax to pay) of which surely over one million acres was worth as much acre for acre as the C. U. half million acres. See what the same care and intelligence in handling the same would have produced. Fancy a $12,000,000 fund for schools in Wisconsin. You have had your Board of Regents, your School Land Commissioners, etc., etc. But we may say, "Look not mournfully upon the past, it comes not back again, improve the present, it is time," and thank God we have a part of the bones left and by cracking them may find a marrow.

The State of Minnesota does not sell her forest lands. The pine timber is carefully estimated, appraised and sold same as private individuals sell for full value, if it is best it should be cut to save from decay or fire. The state of Minnesota, therefore, is holding as a government reserve, practically, these cut pine lands.

The forest area of the United States is small compared with its total area. You may travel over five or six trans-continental railroads across the arid plains. The Canadian Pacific from the Rainy Lake away, near 2,000 miles, before you see timber. The Great Northern and the Northern Pacific from St. Paul west past the Rockies, before you see any timber. The Union Pacific from the Mississippi river clear through to San Francisco with only a little in the Sierras. The same on the Southern Pacific and the Atlantic & Pacific Railroad, no timber of any amount and what little there is is almost inaccessable in the mountains. Six long lines of railroads and no forest, and what is worse than the present absence, the fact that climatic conditions, want of moisture, forever prevents a forest culture or conditions. The government timber culture scheme on the prairies west of the Mississippi and Missouri rivers is a failure. On the Pacific coast there is not sufficient hard wood for their axe-helves. Northern Michigan, Wisconsin and north-eastern Minnesota has it all (west of Ohio) and of these three states (Wisconsin as much as both Michigan and Minnesota). We lay between the two, protected on our whole northern line by the great inland sea Superior, whose evaporation and humid atmosphere make the forest life and preservation possible.. See what a heritage we have in our millions of acres of forest, how the bare prairie states west and south west of us are, and will be more in the future than the past, depending upon us for their pitch fork handles even.

Again once remove the sponge, the forest of Wisconsin and Minnesota, that hold back the spring freshets, retards the melting snow and the falling rain, and the Father of Waters, the Mississippi river, would soon be "bald headed" if he is not already being "snatched" so by our so called "Lumber Kings," there is another name for them, I heard it in Germany up the Elbe river, in the forest of Bohemia, don't remember the German but it means "Wood Butchers" really.

Remove 50 per cent. even of the present forests of Wisconsin and Minnesota and not a levy or city on the bank of the Mississippi would stand one year, the consequent rapid outpouring of our spring floods and heavy rainfalls. When George Washington was a surveyor and he and Lord Fairfax were in the "wilderness" surveying the lands of Lord F., the hills and valleys of the Potomac were a virgin forest, no floods then on the Potomac, now their hills and valleys are denuded of forest and I have seen a rise of thirty feet in twenty-four hours in that river. You will find no fences now in the valley where once were the old farm-houses and improvements near said river, nothing to hold the water back. Ten million of people to-day in Russia are nearly starving from failure of crops and drouth in the valleys of a certain district where once were fertile farms, kept so by the adjoining hill and valley forests, now destroyed. Where there now could be some hundreds of thousands of cattle, you now sold for bread as the last resort of a punished people of a barren land. The people cannot stay there much longer.

The same is true of other countries, the valley of the Euphrates the land of Palestine and many others. The nation has spent many months in studying this forest question in Europe. I find in Germany, France and Austria that they are thoroughly waked upon this subject, though 300 years to late for forest preservation, they are trying to plant and raise a fine forest. When conditions of moisture, proximity to bodies of water, etc., are right, they are doing well. I saw in the little valley of Baden, east of the Rhine valley, and which includes a part of the Black Forest, not so large as one of our Wisconsin forest counties, 110 men, foresters and experts employed by the government at a cost of some $30,000 to $50,000 a year in the care of the small area of that forest. They have established schools of forestry which I visited at Nancy, in France (the best one), also a good one at Thorn, near Dresden, Saxony, where they have a three-year course mainly in study of forestry, some other studies included, music, German, and French. This at a total expense of about $300 a year. Some of you men who want to make specialists of your sons, send him over to Nancy Forestry school for three years and have him ready for a professorship of a chair of horticulture and arbor culture soon to be established in all our universities, or if not it should be. I think Harvard at Cambridge, Mass., has the only one in this country, and that was endowed by John Arnold, a wealthy citizen of Boston, and now so ably filled by Prof. Charles S. Sargent, a thorough scientist and a practical woodman as I know , for I have been with him in the forests of the east and west and know that he can "kill an Indian on foot in the woods." Graduating from college with lots of inherited wealth, traveling in Europe, he happened on the school of forestry at Nancy France; went in and graduated there on the third year's course; came home and for many years ever since has been hard at work on the practical and scientific work of this coming important study. I commend his work. We have young men in our homes who can do the same.

Wisconsin is peculiarly situated and protected for a great forest reserve. Our western boundary, the upper Mississippi and St. Croix rivers, the swamps and forests of northern Minnesota. On our north the great lake Superior, on our east, lake Michigan, on the south our farms.

What makes the annual snow fall 50 to 60 feet deep on the Bennese Oberland of Switzerland and only one-tenth of this on the Rockies of this country; but the evaporation of the near large bodies of water, the Mediterranean, the Atlantic and German Oceans on the southwest and north, which the high Alps attracts and it falls in snow on the Matherhorn, the Finistrarehorn, the Jungfrau and a hundred other mountains in this land of glaciers and avalanches, near to the sun on three sides, while the Rockies are far inland, dry and desolate (with 5 inches of rainfall to our 32 in Wisconsin per annum), and they always will be. I have been in all the Pacific coast forests from Mexico to Alaska. They only exist where climatic conditions, moisture, fog, etc., are favorable to the growth and permanent maintenance of a magnificent forest if we will only use ordinary care and have a true appreciation of its value. There is much of sentiment and poetry that can be said on the subject. We will leave this to those who write of what they read and not from what they know or have gained in the forest itself.

I suggest that in conclusion the establishment of a Wisconsin forestry commission, thus creating a forest reserve of the forest state lands, the addition to the same of all forest lands from other sources, by donation from private owners who may wish to help the cause and the school fund, following this idea should acquire from the general government its usual land within the government area by gift or otherwise, perhaps swelling the original half million acres to one million or over and make this all a sacred legacy to our schools, and to the interest of the whole state. Suppose Kansas had our million acres of forest to-day, would $20,000,000 be dear for it? It is cheaper to save one hundred trees than to raise one. Let us make the start and we may see other states follow our example.

DIFFICULTIES IN THE WAY OF RATIONAL FOREST MANAGEMENT BY LUMBERMEN.

By HON. B. E. FERNAN, Chief of Division of Forestry, Washington, D. C.

Mr. President and Members of the Wisconsin State Horticultural Society: In accepting the invitation of your secretary to participate in your discussion of the important subject of forestry, I have kept in view the fact, that your state is still well wooded and one of the most prominent lumbering regions of the union, having next to Michigan the largest saw mill capacity of any of our states.

The friends of the so-called forestry movement, which is mainly a movement towards a more rational treatment of our natural forest resources have been successful at last in impressing *even lumbermen*, at least the thinking ones, with the desirability, if not necessity of a change in methods, practiced in the utilization of our forest wealth.

It is now admitted even by lumbermen and their trade paper, which only a few years ago ridiculed the "forestry cranks" and "denudaties" that the white pine, our great staple, is doomed to speedy exhaustion, that other kinds of timber show weakness in the question of supplies, that the waste in our lumbering methods and still more in our annual conflagrations which follow the lumbering operations, is uneconomical and detrimental all round, and that something ought to be done to arrest this waste and to introduce better methods. What would such better methods be?

In the first place we would want the fires stopped or at least reduced in frequency and extent. The smallest damage which the annual forest fires do, is the destruction of standing timber. This sounds paradoxical; nevertheless it is true, that the many millions worth of timber, not less than ten to twenty millions, which are annually killed in all parts of the United States, is a mere bagatelle when compared with the lasting damage which these fires inflict upon the future of the areas which they overrun; burning out the vegetable matter of the soil, inviting a growth of brambles, brushes and inferior trees; they render these areas unsuitable for human occupancy and for a long time even for tree growth of the kind that is useful to human arts.

In the next place we would want to have the timber most closely utilized. Now hardly more than thirty to forty per cent. of the wood in the trees that are cut down, reaches the market; sixty to seventy per cent., rarely less, is left in the woods unused. A closer utilization of this waste, dictated by true economy, would have the additional advantage that a prominent cause of the fires and especially of their destructiveness would be removed at the same time.

Thirdly we would want to have introduced some system of forestry by which a desirable aftergrowth is secured.

What such a system involves, has probably been outlined, by your secretary or may be found in Bulletin V of the Forestry Division, entitled "What is Forestry?" Briefly stated, it would require the exact opposite of the present methods pursued by the lumbermen.

Like the lumbermen, the forester uses the ax to accomplish his end only in a different manner. Instead of culling out the biggest trees of the best kind, he would first remove the poorest kind and the poorest trees, thus preparing for the reproduction of the better kinds. He would then cut the latter, but not with a view of getting out the most lumber in the shortest time, which is the lumberman's sole object, but in such a manner as to encourage and benefit the young after-growth, that may have sprung up; giving it more light gradually as it is needed, so that when the last stick of old timber is removed, a young forest of better composition than the old one was, shall occupy the ground. It will appear at once, that this requires knowledge, skillful management and time. The result would be that not only more of the old timber—all if possible—would be utilized, but after it is used, a new crop is coming on on the same ground with a value in proportion to the full grown forest, such as the calf bears to the cow.

Such results of a change in methods, it would seem, would incline the lumbermen, to adopt these methods without hesitation. Here he is promised protection against loss by fire, large amounts of material and an improved property after the old material is removed. Certainly so far his interest and that of the community as represented by the forestry reformer is identical.

Why does the lumberman hesitate ? Why does he not reach out after these results ? Why is there no movement anywhere ? at least not in your state, visible toward a change of methods which would secure such boon ?

Because the lumberman does what is natural to him as a business man, he looks at the cost, by which these results and advantages are secured: He would like to have his property protected against damage and loss.

by fire, but that involves in addition to constant vigilance the employment of men and means to prevent and to check fires. He would like to utilize a lar er amount of timber, but that would necessitate the cutting and hauling of inferior grades and sizes to a market, where his competitor, who brings only the cream, will undo him and his conservative methods; the average cost of producing his material will reduce his margin of profit in proportion as he adds inferior material to his produtcs. He would like to have his property in better shape, than he now usually leaves it, he would like to slaughter the cow and have a calf left, but that again involves expense for management and time, which is money. In fact we may as well realize, that the lumberman, like most private individuals and business men, has but one interest, namely his pocket; they carry on their business for profit, for the largest amount of profit possible and we may add, for immediate profit.

If would have the lumbermen to change their method, we would have to show them a profit in the change, a profit expressed in dollars and cents, and that is not possible in a general way, but the calculation must be placed upon definite conditions, which vary with locality and many other variable elements.

Without going into a detailed discussion as to what considerations must enter the complicated calculation of profitableness of one method over another, I may only state my belief, that at the present time with existing economic conditions the application of forestry principles in the development of our forest resources would in the rarest cases be immediately profitable to the lumberman; the profit could in general be shown only for the future, and that for a rather indefinite future. Not that it would not be immediately profitable to stop the forest fires, or desirable to have the results of good forest management, but it is questionable whether the expenditures for such management would be justified by the returns in the near future.

Forestry deals with slow decades and centuries, not with fleeting years and months.

Only those who expect to live long or leave to their children and grandchildren the profits of their present toil, will make sacrifices now to insure that future.

As long as virgin forest lands are to be bought cheaply and railroad development brings their product within easy reach of markets, regulated forest management will not be able to compete with the unmanaged territories, unless in exceptional cases.

This does not exclude the careful lumberman from exercising all care to stop unnecessary waste, for that is profit into his pocket, but that kind of care is not forestry, it is only common sense.

We should then be very hopeless, if we had to rely only upon the pocket interest of the lumberman for more rational forest management; the devastation of the remaining woodlands would go on for a long time to come without abatement if the community did not protect its interest in this matter.

As the lumberman is interested in the present utilization of our forest resources, so the community is interested in its future condition.

This interest, as has often been pointed out, does not only lie in the maintenance of supplies, but in the indirect cultural significance of forests upon soil and water conditions. If then the community has an interest in the welfare of the forest, it must do something towards insuring its future, it must do that or enable the lumberman to do that which he can not be expected to do from private interest only.

There are two things which the community can and ought to do now, whatever it may find possible to do later: To own, protect and manage whatever forest lands it does own or can acquire, and to provide for adequate protection of all forest property against fire. The public timberlands remaining ought not to be sold or otherwise disposed of, but should be placed under competent forest management. The community can afford to forego profit from such management in the present for the sake of insuring the future. State governments may secure and reserve for forest purposes such wood lands as exist or relapse for nonpayment of taxes into their hands, and thus make a beginning for the future. Counties, towns and smaller communities may for their self protection reserve as some owners in Massachusetts have begun to do, tracts of forest lands which eventually may also become immensely valuable in timber production. Such forest reserves will form the nucleus and beginning for the education of foresters and establishment of object lessons in forestry, which must sooner or later form a part of our covilization.

More urgent, necessary and practicable is the protection of all forest property against fire. Aside from the indirect interest, which the community has in maintaining desirable forest conditions, it is its fundamental duty to protect property, a duty that it unquestionably owes to the owners.

Why forest property has been unjustly discriminated against it is difficult to say, except that it was difficult to protect.

There is, however, now as shown by the Canadian and Maine systems, a possibility of instituting such a co-operation between the owners and the community with reference to fire protection, as will insure comparative immunity from this greatest enemy to rational forest management.

I appeal therefore to you as a society, having at heart cultural conditions of your state, to exert yourself in two directions; namely, to secure not only the passage but the enforcement of practicable forest fire legislation, such as has been passed in Maine, modified according to Canadian practice, and, secondly, to support every policy that looks to the reservation of forest lands for the use by the community. In this latter direction the most immediate steps might be for you to memorialize congress in behalf of the passage of the so-called Paddock bill, which provides for the withdrawal of all public timber lands still in the hands of the general government, and for their rational management.

"FROM JERUSALEM TO JERICHO."

VIE. H. CAMPBELL, Evansville.

And it came to pass in the days of the Badgerites, during the reign of one George, whose surname was Peck, that the inhabitants of Jerusalem frequently sought counsel of the tribes round about Jericho, albeit in Jerusalem there were many wise men and leaders who were far famed among the people, there also dwelt those in Jericho who had divers gifts, and among them were those who had the gift of divination, called in those days, far-seeing.

When the elders and the chief priests were come together their hearts were filled with consternation because of the loud clamors of the people who did besiege them constantly on account of the great dangers they encountered in their passing to and from these great cities, and they besought them earnestly and did fall down upon their knees to petition them for a better state of things, saying, Lo! the distance from Jerusalem to Jericho is not great, but much valuable time has been lost while we have traversed it because of the perilous condition of the highway and we beseech you that you will give ear to us and having heard our petition you will lose no time in proclaiming the word, saying, Go ye out into the highway and give it your careful attention, that its crooked ways may be made straight; and let all men bring stone from the mountains round about and cast them into the pit-falls, and let them be mightily interested therein lest they incur the displeasure of the council. For we say unto you, if the word goes not out from among you, Behold! when the time for the council of the third and fourth month cometh no one of us can attend it, for at that time the roads round about Jerusalem and Jericho will be as a river of mud, full of uncleanliness and no man will risk his life or that of his beast by trying to pass through it. And furthermore, we say unto you, that if you do not send forth this decree while it is yet early in the year, Lo! in the fifth month the wily pathmaster will be abroad in the land and with his host of untrained and unprofitable servants, will dig up the dust on one side of the road and put it on the other side, making higher the hills and deeper the valleys, spending much time foolishly, for which the people are heavily taxed and the highway is made no better.

And the chief priests and the elders answered them saying: "Howbeit that this man whom you call pathmaster is so maligned by you?

Why persecutest thou him? Dost thou not each year, in the beginning of the seed time, with much loud noise appoint him to his high degree, and at his bidding dost thou not come out to the highway, every man among you, with wagons, shovels, plows and beasts of burden to dig up the grass that groweth by the roadside, making many barren and waste places upon which the nettle, the burdock and the noxious rag weed delight to grow, and then when much array of work hath overcome him, dost thou not also sit down with him in the friendly shadow of the wayside tree and talk and make merry with him at thy neighbor's expense? Dost not gossip roll like a sweet morsel under thy tongue?" And they consulted together saying, "What power of divination hath been given unto these men that they say these things to us and speak as those having the gift of prophecy? Whence cometh the knowledge to those high in authority that is not communicated to the rulers? Surely some one among us must have betrayed us." And they trembled and were sore afraid lest the displeasure of the rulers be visited upon them. And when the multitudes saw their consternation they wondered greatly and marvelled thereat.

And it came to pass that there were certain ones among the elders who were spies and who went forth to the pathmasters, all about the kingdom, who were legion, and told them of the plans that had been set for their destruction and that it had been decreed the badge of authority should be taken away from them and the days of their reign should be few in the land. And when they heard it they waxed wroth and showed their anger to the king and said from this day forth we shall do no more work neither shall we pay tithes for the highway.

I think you will readily see, my friends, that my subject pertains to the road system; that Jerusalem means the place we reside and Jericho any point to which we may wish to go. When I thought of naming my paper improvement of the highway, I immediately thought I could hear you say, "what does a woman know about road making, what have roads to do with horticulture? and I concluded that I did not dare to risk a little that might deprive me of my hearers. But to both of your supposed queries I can reply, "a great deal." women have to travel over the roads for business and pleasure just as men do, although the condition of the roads for a considerable portion of the year would not warrant me in saying that a ride over them could be for pleasure. It was a woman who invented the mechanism for deadening the noise of the elevated railways although men had studied the problem for a long time and could not find a solution. A few women have passed as satisfactory examinations for the position of engineer as men. When I tell you how many trees and shrubs you can sell for the adornment of my road after I have it built then you will be able to understand its relation to horticulture. Moreover every horticulturalist is interested in all that tends toward the developement of the country.

I have not undertaken to prepare a paper on this subject without due recognition of the fact that certain people, not widely celebrated for their wisdom but rather known for their lack of it, "rush in where angels fear to tread." As it is universally conceded that those who do not sing are the most severe critics of music; those who have never been blessed with children have best theory of family government and those who have never taught school have the best system of discipline, it is not inconsistent or unreasonable to suppose that a woman may have a fairly good idea of what constitutes good roads and how they may be constructed.

It is said that "the progress of a nation is more easily judged by the character and extensiveness of its road system than by any other symbol." A moments reflection shows the truth of this assertion. Aboriginal man, with no knowledge of commercial advantages, was content with a trial, with mounds of stone for his guide over the vast prairies, or blazed trees through the forests. But in the evolution that gave new thoughts and new aspirations for progress, came the desire for better facilities for communication, a prompting to transfer the pack from his own shoulder, r that of the squaw who trudged patiently and uncomplainingly behind him, to the back of a horse; and not long was he content to plod along by the side of his horse before his ingenuity devised the vehicle which would carry him as well as the load.

If we admit the excellence of a nation's roads to be a symbol of progress, then America, taken as a whole, must be regarded as the least advanced of all civilized countries, for, although no country has a greater road mileage in proportion to its inhabitants than the United States, in consequence of a lack of a general system of construction and maintenance of highways, our roads are far below the average; it is said they are among the worst in the civilized world and, more's the shame, there is no excuse for it, because we are a wealthy nation with abundant facilities for the best road system in the world.

I have gone over the road from Jerusalem to Jericho for twenty-seven years; it is no better and some portions of it are worse than twenty-seven years ago, and yet is a piece of road semi-annually administered unto by the wisely (?) elected pathmaster and his trained and skillful coterie. This condition of things is a serious drawback to the advancement of a farming community. The duties of the citizen are imperfectly discharged and the social duties are entirely neglected. It tends to isolate our farmers; households have little touch with each other and we are a community of strangers. Rather than run the risk of being swamped in the mud for months of the year, a dangerous jolting over the hubbles three months and being blinded and choked by the dust that arises in clouds about us the remaining five months, we will sit in blissful ignorance at home. But with good roads at all times of the year distance counts for nought because it is an enjoyment to traverse it.

With a woman's idea that the best in quality is never too good, and that "a poor article is dear at any price." I shall start with the premise that the best road is the one in which the best material and skill enters into its construction. Where experience in such matters has been gained, it has demonstrated the fact that a road with sufficient strength, good surface and thorough drainage can be kept in good order with a much smaller quantity of materials and labor than a poorly constructed inferior road. Wise ones tell us there is nothing better for country roads than the Macadam system, which is built on a firm and well drained foundation with six or eight inches of good crushed stone, nearly uniform in size from one to two inches in diameter, compactly pressed down by a steam roller and with a thin crust of fine gravel on top. You say "it will involve a great deal of expense to build such roads as this in the country." But has expense been the subject of your consideration when you have been willing to continue the system of road making that has been in vogue ever since I can remember? It costs far more to keep a poorly constructed road in repair than a good one. It has cost Wisconsin many thousand dollars each year to maintain some of the worst roads in the world. The money has been worse than wasted, and now do not, when we propose to you to save some of your money by investing in really good substantial roads, preach to us about "the sin of extravagance."

After you have built good roads put proper vehicles upon them. One writer on this subject has humorously said, "a wagon wheel is a millstone with road bed for its grist and the measure of the damage which it inflicts is, the weight being equal, inversely proportional to the width of the tire" The dust on a macadamized road is proof of this assertion; only a smaller portion of it comes from the feet of the horses, the rest has been ground up by the narrow wheels. We find in those foreign countries that have the best roads their laws require that wagons for heavy loads must be provided with tires from three to ten inches wide The broad tires serve as rollers to compact the road instead of grinding it up and destroying it, as is the case with narrow tires. It is said the ideal surface for a wheel is that which is obtained in the continuous steel bar of a well constructed railway. We can best approach this ideal in our country roads by constructing them of stone, for the experience of more than a century serves to show that only in rare cases can we find conditions where the materials of the soil or of the subsoil are fit for the construction of roads.

The best roads are those constructed of asphalt, it is found to be the most durable for heavy traffic, but they are damaging to the feet of horses if they move over them at a faster rate than a walk.

Elaborate experiments have been made to ascertain the relative resistance, or friction, of different kinds of roads and it was found that 200 pounds of force is required to draw one ton over an ordinary dirt road while one-half that amount of force will do the same work on a macadam road. If the saving in the cost of transportation is proportional to the load carried, it would amount to enough each year to build a long stretch of good road. This is a practical point for horsemen to consider; then to this item of economy must be added the saving in the wear and tear of vehicles and harness. If we attempt to compute the saving to the state of Wisconsin in one year, we would be convinced of our folly repent of our sins in this direction. Two horses would easily do the work of four. How much would be saved by keeping only one-half as many horses as we do now? Figure this out for yourselves, gentlemen.

According to the statistics compiled from the assessment rolls of the year 1890 we kept 438,25_ horses and nearly 6,000 mules; deducting from this number the per cent of young horses not old enough to work and those actually required to do the work on the farms, and allowing $30 for the average cost per year for keeping a horse (and that is a very low estimate, for your horse could not have hay and four quarts of oats per day at that rate) you will be startled by the cost. It is said that a mile of good macadamized road is more easily supported than a poor horse. We have always had a great deal of grievance about the high rates charged by railways for transportation, while we have sat in supreme ignorance of the excessive cost of our own means for transportation. Our public roads are feeders to our railroads, consequently good roads mean better business, more valuable farms and a great economy of expense with regard to everything which bears relation to transportation or travel.

To substitute an effectual road system for this present lack of one will require not only legislation, but much agitation and education It is a subject of national import and all of our larger institutions of learning should teach road making to their classes in political economy. This art demands a wide and well founded training and must rest upon a good knowledge of several natural sciences; the road maker must have an intimate and thorough knowledge of the geology of the country which the road traverses; he must be a naturalist and a practical horticulturist. Trained and skilled engineers are as necessary to survey and stake out our public highways as they are our railways, and perhaps more so, because road making is more complicated than the work encountered by the railway engineer.

At present there are probably not more than fifty engineers in the United States that have been properly trained for the work of constructing highways. While the professions of the law and of medicine are so over crowded, there is plenty of room in this profession and our enterprising young men are going to see it and prepare themselves for it.

Practically, our roadways are too wide. There is no necessity for a road being wider than is necessary for two wagons to conveniently pass each other. The saving in land would be a considerable item, the expense of weed commissioners would be another, yet if a good road system existed the beauty of the landscape would be enhanced by a roadway wider than is needed for the practical purpose of traffic, and a properly constructed road would have its points of beauty as well as utility. Instead of the borders of untilled land with its nursery of noxious weeds that render our highways so unsightly and unattractive there could be a long stretch of green sward, with here and there a wayside tree or shrub, furnishing a new field of labor for our arbor culturists. A well kept lawn does not enhance the beauty of a farm more than a grassy, well kept roadside shatted by the branches of its broad spreading trees.

Many beautiful trees have been sacrificed because they shaded the road so much that they retarded the evaporation of the water, and mud holes, dangerous to horses and vehicles, became more numerous; but with the best roads this difficulty would not exist. Such roadways would be as much of an advantage to our towns as they are to the country.

What is more attractive than the beautiful shaded avenues leading to some of our principal cities? With the solution of the road problem will come the establishment of free mail delivery in rural districts.

To California has been given the credit of taking the lead in the movement for good roads and Contra Costa county leads California. There is a system in vogue there of numbering the residents on the country roads; each mile is divided into ten blocks having a frontage on each side of the road of 528 feet. The numbering is done as in cities the odd numbers being on the left and the even numbers on the right.

This system has many advantages and careful criticism has failed to discover any disadvantages. It is not expensive; it renders the guiding of strangers from one point to another easy and simple. The end of each mile is indicated by a circle; the letter x within the circle indicates ten blocks; at the end of a half mile is placed the letter v in a closed half circle. If we had such a system in Wisconsin it would greatly aid our county officials who are always puzzled to know how to correctly compute the exact mileage.

To bring about the radical change in our highways will require a great deal of effort and preparation. It is the duty of the state to censure the best interest of its people and this is a matter that should be under the direct control of the state. There is as much, yea more, need of a state commissioner of highways as a state commissioner of railways; he should be a man qualified for his position by special education, as should *all* who supervise the construction of the roads.

Labor is cheap, so are materials and there is no reason why we should not have the best.

We would confer a well-timed benefit on the unwary tramp by giving him an opportunity to be of use on the roads over which he has trudged so many wearisome miles besides aiding those, who have no woodpiles on which he can exercise his skill, in furnishing him the much coveted (?) employment he seeks. Who knows but the tramp "has come into the kingdom for such a time as this?"

Horticulturists ought to take the lead in this matter and if they will be as enthusiastic in providing for and enforcing laws that will give us a road system commensurate with advancement and prosperity of the people as they have in promoting Arbor day observance, the people will rise up and call them blessed and will visit the nurseries of fruit growers for the purpose of selecting their own stock instead of buying from the wily tree peddler and being swindled.

I hope, my friends that I may have given you some suggestions in this paper that will cause you to think twice upon this subject even if it does not stimulate you to action I am sure you will not think I am in quest of the official position of pathmaster, because it is one of the stock arguments against woman suffrage that "she cannot work out her road tax;" perhaps you will think this is the reason I am so strongly in favor of a new system, but be that as it may, I am sure women will be more willing to pay taxes for the support of good roads than they are for many things they are taxed for.

"The pathway of life may be narrow and steep,
But the road to the country is steeper,
The pitfalls and snares that beset us are deep;
But the mud that surrounds us is deeper.

There are fence rails for bridges and mud holes for drains,
And hard heads and boulders for gravel;
And broken-down buggies, on hillsides and plains,
Give warnings, like ghosts as we travel.

Lank horses, by work and abuse broken down,
Gaze at us from roadside and stable,
Young men reaching wistfully out toward the town,
Or seeking its portal when able.

Deserted farm houses; the fences decayed,
And the breezes through weed patches blowing.
Where once happy children rejoiced as they played
Hide and seek when the field corn was growing.

What joy for the youth, as his longings expand,
In a life so restricted and narrow;
His prospect 'm'd all opportunities grand,
But to follow the plow and the harrow.

Half banished from hope, and shut out from the world
By a flimsy but tangible curtain:
Society's pleasure away from him hurled--
The roads are so very uncertain.

There's little enjoyment in life scattered 'round,
And little of profit or pleasure,
In roads where the bottom can scarcely be found
With less than a seven-foot measure.

Let us seek some reform then, at once, e'er we lose
All trace of our roads from our annals;
And make surface roads that the public can use,
Or else take the underground channels."

A GARDEN OF ROSES.

J. E. WRIGHT, Baraboo.

The few moments that can be devoted to this subject will be occupied in discussing my own experience, and short though it be, I hope that it will be of some value to rose lovers.

When the owner of the little house at Baraboo, described its beauties to me in the winter of '85 he laid stress on a rose bush, with the spicy name of Cinnamon, and although I knew nothing of roses, and had never owned one, that great bush. standing so erect nearly ten feet high with a main stem as large as my arm, was one of the inducements to the purchase.

But when we took possession in early June, and watched the buds open, our disappointment you rose growers will appreciate.

Friends gave us plants, and in 1886 we bought the following varieties Magna Charta, General Jacqueminot, Paul Neron, Dr. Hogg, R. D. Baxter, Triumphe d'Angier, Glory of Mosses, Baltimore Belle, Prairie Queen and Madam Alfred Carriere.

Fortunately in setting these out we dug a narrow bed in the lawn about 18 inches wide and 10 feet long, and 18 inches deep. The ground had been filled in with clay from the cellar to the depth of about a foot so that beneath the surface there was drainage. This bed I filled with my best garden soil, made rich with manure—here in a row the plants were set, during the last of May, the climbers about the house and the bed left level with the lawn.

Those plants grew, and the Triumph d'Angier began to blossom and continued to bloom until its last rose was hardly above the surface of the soil, and there it died the same season. Gen. Jacquemine also died without flower. Madam Cuvire died that winter, never having shown her beauty.

These plants were two year olds, and had been ordered with notice that they were to grow in a garden and there remain over winter. I covered them in the fall with dry dirt to a depth of about four inches and in spring was pleased to find life in all that had been covered except Madam Carriere.

They were all alive last fall and blossomed freely during the season.

Paul Neron gave us flowers of five and one-half inches in diameter and more in number than any half dozen plants of the same variety in the city.

Dr. Hogg and Magna Charta are also great plants, producing flowers throughout the season in abundance.

In 1887 I bought from a catalogue, a number of plants both monthly and Hybrids as per catalogue, which came by mail. These little plants were set out in May and June and the monthlies surprised us with their readiness to bloom that same season.

These I covered in the fall with dirt, though warned by the wise ones that it would be their grave. Spring came, and with it blossoms on many, and last fall were living of these plants, Meteor, Etoile de Lyon and Hermosa.

But the mortality in roses made me determine to try many varieties in the hope of selecting some that might stand the rigor of our climate where the thermometer falls to 50° degrees below zero at times, and knowing the treachery of memory I have carefully recorded results on the following plan, which I ask you to carry out for a time and give me your experience. I will at some future date, send a report to the society.

This is the system of the plan:

1st. Indicate locality of plant, *i. e.* in your own garden. I make beds and give them names; plant in rows, setting from north to south and numbering in rows.

2d Name of variety as given by grower.

3d. Class of rose as per H. B. Ellwanger.

4th. Habit of growth: d dwarf, m moderate, f free, v vigorous.

5th. Grower from whom purchased.

6th. When purchased.

7th. Class as per catalogue of latter.

8th. Date of introduction.

9th. Name of propogator followed by introducer if different.

10th. Parentage.

This is given in two lines of record, and then follows history of plant,

To this add on stated occasions a catalogue of roses in bloom, and your record if you add your own operations is quite complete.

I take the liberty of giving you a line from my record.

D. 16. Hermosa B. m R. S. 89, Hardy Ev. Bl. 1840, Marcheseau.

S. 21. John Hopper H. R f. R 9, H. P. 1862. Ward. Jules Margotten X Mme. Vidot.

Which means that Hermosa in bed at D. 16 is classified as a Bengal rose of moderate growth by Ellwanger, and were purchased from R. S. in 1889, and he called it a hardy, ever blooming rose.

It was first grown in 1840 by Marchesean, who also introduced it. Parentage unknown.

That John Hopper at S. 21 is a hybrid remontant of free growth, according to Ellwanger, and was purchased from R., who called it a Hybrid Perpetual in 1890. It was first grown by its introducer, Ward, in 1892, and is from Jules Margotten crossed with Madame Vidot.

This record can be made at the time of planting out.

Aug. 12, 1892. Mignonette, Paul Nabonnand, Clotilde Soupert, Theresa Lambert. Louisa de la Rive, Rubens Gen. de Tartas, Wm. Baron Viellard, Paul Ricault, Queen's Scarlet, Mme. Lombard, Perle des Jardine, Appoline, Wm. Welche, Mrs. DeGrau, Paquerette, E. Beauharnais, Meteor, Cecil Brunner, Triumphe de Luxenbourg, Mme. Camille, Marie Guillot, George Pernet, Lucullus, Triumphe d'Auggier, Paul Neron, Duchess d'Ossuna, Hermosa, Dinsmore, Fisher Holmes.

And thus every week furnishes matter from which we can determine the blooming time of our roses.

If you add to this your own operations, as with date used Hellebore for slugs, tobacco wash for lice, etc., with results, your rose record will be quite full.

Now take your catalogue, if you have none send at once for one, and select from it the roses you wish to have in your garden. Take time enough for this to select your favorites and let the other members of your household have a voice in this matter. The children will watch with intense satisfaction the roses they have selected. Send your list to the grower and direct him to ship on a date certain, fixing a time between May 10th and 20th, as for myself I will buy what is known as mailing plants, these have proven most satisfactory.

Then read up on the varieties you have ordered. Learn about their habit of growth, so that in setting out you may give them suitable locations.

In early spring dig your bed deep and pulverize the soil well, adding *old, well-rotted* cow manure plentifully, leaving the bed just level with the surrounding soil.

Prepare your paper plat giving location of each plant.

When the roses arrive, place them in a pan of tepid water and see that their roots are not bruised; if you find any, cut them clean with scissors.

In the evening when the sun is not too hot, plant them in their places, firming the soil thoroughly at the root and a little deeper than they were in the pot.

If on other stock put them well down, and learn on what stock they are, water well, and cut off every bud.

Your bed will have more green in it in the morning than it will a month later. The leaves will begin to turn yellow and drop off, don't worry, for soon the little plant will begin to push out new foliage.

Now look every plant over carefully for scale, a little excressence like a small blister, mash it. It is a louse and must be destroyed, having found it on one plant look to it every day until the last vestige is removed.

If the plant is not vigorous the delicate leaves and stem will be covered with lice, but healthy plants can stand them. If they are to be removed use a strong decoction of tobacco water, spray them well, especially the under side of the leaves. After standing an hour, wash them thoroughly with clean water, or the tobacco will make your rose sick.

Now comes thrips, a little worm that feeds on the tender foliage, very easily destroyed by the use of powdered white hellebore, either dusted on the plants, while the dew is on or dissolved in water and sprayed.

You may notice that one of the plants is wilting, the top bud hangs over. Dig right down and kill without mercy the grub working at its roots.

Thus throughout the season watch over your plants. Protect them, and till the bed, keeping the surface soil broken very fine.

When they begin to bloom furnish them freely with water, let it soak way down. Water in evening, and the following morning rake over the bed again to keep the surface broken.

Cut your roses as soon as fully blown and *cut them with long stems.* This I consider the most satisfactory manner of pruning, for new wood only furnishes flowers, and a rose can have no better setting than the foliage which grows with it.

In the fall when the wood is hardened, lay down the plant, bending it at the root, and cover with dirt. Over this you may put rubbish so that the ground be not alternately frozen and thawed, and in the spring delay removing until the season is opened, then raise your plants and cut out *all discolored* wood. Give them a good dressing of manure, and from this year on your plants should improve.

In pruning be severe with delicate and weak growers, rampant growers require thinning out of branches only.

DISCUSSION.

Secretary—Last summer Mr. Wright had a beautiful display of roses at our meeting at Baraboo, and we thought that if we had a paper from him at this meeting that we could prepare to grow roses next summer.

Chas. Hirschinger—I want to ask Mr. Wright if his practice of cutting back close to the main stem would not kill the plant?

J. E. Wright—It would not. In trimming the purpose is to compel them to throw out new shoots. It is from the new shoots we get the bloom, except with climbers; roses grow on all climbers on the old wood.

W. D. Boynton—Were those roses you mentioned grown under glass?

J. E. Wright—Certainly they were; that is why they dropped their leaves.

W. D. Boynton—If you get only one summer's bloom it is well worth the while to put out fifty to one hundred of those roses.

A. G. Tuttle—Do you get a continuous bloom from Gen. Jack?

J. E. Wright—Certainly I do. It is surprising to know that Gen. Jack did not bloom until the 27th of June and it bloomed until November.

J. L. Fisk—My Gen. Jacks bloomed the most freely of any rose I have. I give them about two pints of liquid manure at a time. I am afraid Mr. Wright will go out some morning and find his Hermosa and La France all gone.

Mrs. Huntley—What do you consider your best and hardiest white rose?

J. E. Wright—If you are satisfied with about four week's bloom, the Madam Plantier.

J. L. Fisk—I have Madam Hardy and Madam Plantier. I have also a white Hybrid Perpetual that has been very satisfactory.

R. J. Coe—Mr. Wright, do you not consider dry earth essential to keeping through the winter?

J. E. Wright—Yes, I do. I did not speak of it because I supposed every one knew that you could not let green wood lie in water all winter.

A. M. Ten Eyck - Does it make any difference what kind of soil roses are grown in?

J. E. Wright—Roses will grow where corn will. They will grow anywhere.

R. J. Coe—What is the most productive of bloom of any rose you have?

J. E. Wright—Dr. Hogg; it is one mass of purple all the time. Roses require a great deal of water; if good drainage is afforded there is no danger of giving them too much water. Any protection of roses is all right; take a barrel, for example. They come out all right when protected; earth is all right for protection; they lay down very easily.

J. L. Fisk—I use evergreen boughs to protect my roses, and I find they are the best of anything. All I want is to keep them from the sun.

Invitations were received for the summer meeting from Eau Claire, Kilbourn City, Evansville and Grand Rapids. On motion the place for meeting was left to the general officers to decide

Report of committee on seedling apples

Report adopted.

A. G. Tuttle—Before the close of this meeting I wish to say a few words with regard to a statement in our volume two years ago, in which I was reported as saying that I "knew of no apple so hardy as the Duchess."

I never made any such statement, and I wish this to go into the next volume as contradictory of that statement.

We have spent twenty-five years in testing these apples; we have done it at our own expense. We have not called upon or had any aid from the state society. We have made these experiments with the Russians and we have succeeded. The Longfield we have been using all winter. I see in the state of New York they are putting it ahead of all others.

Q—Will you name the five most promising Russians for general planting?

A. G. Tuttle—Well, I would put Longfield at the head; next to the Longfield comes the Antonovki, hardier than the Duchess. Hibernal is next and is hardier than the Duchess, it is growing and fruiting in Manitoba Yellow Transparent is next. The Early Campaign is two weeks earlier than the Yellow Transparent.

Secretary—The facts brought out in the paper by Mr. Putnam show us the financial side of the question and I would suggest that immediately after we adjourn we meet in our room for the purpose of organizing a forestry association.

Adjourned sine die.

B. S. HOXIE,
Secretary.

REPORTS OF COUNTY AND LOCAL SOCIETIES.

ANNUAL REPORT OF THE JANESVILLE HORTICULTURAL SOCIETY FOR THE YEAR 1892.

The Janesville society, though not doing much work, yet lives. Several informal meetings have been held during the year, but the attendance was small. At the Rock County Fair members of the Horticultural Society made some very fine exhibits. Our president, Geo. J. Kellogg, carrying off a good many premiums.

The display of fruit was very good indeed, and was mostly made by members of our society; also in flowers the society was well represented. We have twenty-nine life, and thirteen honorary members, and a cash balance in our treasury.

At the annual meeting held December 12th, 1892, the following officers were elected for the year of 1893:

President, Geo. J. Kellogg, Janesville.

Treasurer, J. B. Whiting, Janesville.

Secretary, E. B. Heimstreet, Janesville.

Messrs. Geo. J. Kellogg and E. B. Heimstreet were elected delegates to represent this society at the meeting of the State Horticultural Society at Madison, 1893.

E. B. HEIMSTREET,
Secretary.

REPORT OF THE RIPON HORTICULTURAL SOCIETY.

This society has done but little work the past year. Nearly every member is connected with the Fruit Growers Association, and as all are more or less engaged in the growing of small fruits for market the new society absorbs the interest. It is almost impossible to get out a quorum to even elect the officers. We intend to hold a festival during the strawberry season and again when grapes are ripe, so we can trust to be able to give a better report next year. The following are the officers for 1893: President, L. G. Kellogg; vice-president, Mrs. L. K. Hood; secretary, A. S. Crooker; treasurer, E. Woodruff.

E. S. CROOKER,
Secretary.

REPORT OF SAUK COUNTY HORTICULTURAL SOCIETY.

The officers of this society for the year 1893 are:
Franklin Johnson, President.
William Toole, Vice-President.
E. K. Tuttle, Secretary.
Mrs. E. G. Marriott, Treasurer.

E. K. TUTTLE,
Secretary.

REPORT HORTICULTURAL AND IMPROVEMENT ASSOCIATION OF THORP, CLARK COUNTY, WIS.

R. C. Barnes, President.
Jule Hazes, Vice-President.
S Gorman, Secretary.
B. J. Brown, Treasurer.

S. GORMAN,
Secretary.

GRANT COUNTY HORTICULTURAL SOCIETY.

At one of the meetings during the Farmers' Institute last week, Anton Schmitt jostled Mr. Thayer, who is at the head of the horticulturists of this state, on the subject of doing something for horticulture here where fruit can be grown as well as up in the pineries. The result was that thirty-four farmers put their heads together and formed the Grant County Horticultural Society. They are: Ira D. Totman, Chas. Harper, Frank E. Walker, John Reach, Ira Murphy, Henry Irish, J. C. Thier, C. E. Roth, O. P. Walker, H. J. Belscamper, L. A. Breitaupt, Wm. Dyer, Edward Parks, Mrs Nora Ellis, Miss A. Bishop, S. E. Belscamper, W. J. Bailey, Samuel Stephens, Charles Govier, Phillip Walker, Geo. E. Budd, C. E. Cox, R. A. Irwin, R. C. Knoke, Ritner Stephens, Albert Woodruff, Frank Smith, M. A. Garner, Mrs. B. D. Smith, Miss Irene Parks; Delos Abrams, President; Anton Schmitt, Vice President; John R. Westing, Secretary; Mrs. O. Penberthy, Treasurer; J. E. McKinney, A. Y. Decker and Henry Belscamper, Committee of Executive Board.

A constitution was adopted which defines the objects, fixes the terms of officers, and makes membership dues twenty-five cents annually. The officers above named are temporary. Wednesday at one o'clock, was named to effect further work; but the weather proved so bad that the few who met adjourned to meet in the jury room of the court house, Lancaster, at one o'clock p. m., Saturday, January 21st. All members are requested to note the time and attend; also any who would like to become members.

JOHN R. WESTING,
Secretary.

KILBOURN CITY HORTICULTURAL IMPROVEMENT SOCIETY.

KILBOURN CITY, WISCONSIN, March 18, 1893.

B. S. HOXIE, Evansville, Wis.:

Dear Sir:—Our last meeting of the local "Horticultural Society" was well attended and everyone seemed encouraged by the outlook. Miss Mary Conway was elected as secretary in place of Mr. Chas. A. Chanter, deceased.

I will send you a paper next week with resolutions adopted by our society, etc.

If you decide to bring the state convention here we will give you a good attendance and show you the work of a good local society. We hope you will come our way. Our delegate to Madison should have taken a report, and we regret that he did not. Our local press will give us a column to be edited by myself, and we hope to push this work for all there is in it.

The more I study the subject the wider it grows, and I am satisfied that the mission of horticulture is a grand one. We have hardly begun to realize its possibilities for moral and mental, as well as financial good to man.

Yours hopefully,

CHESTER W. SMITH,

Pres. Local Society.

KILBOURN CITY, WISCONSIN, March 23, 1893.

MR. B. S. HOXIE, Evansville, Wisconsin,

Dear Sir:—The following is the annual report of "The Kilbourn City Horticultural Improvement Society:"

The Kilbourn Horticultural Improvement Society is in a flourishing condition. It rents a hall, holds regular meetings, and has over one hundred enrolled members. The society is the means of much improvement, and great benefits to the members.

The outlook for the coming season is very promising, all debts are paid and members seem interested and hopeful.

The numerous membership is largely due to the generous efforts of Prof. C. A. Chanter, whom the society will greatly miss, as he was accidentally killed in Chicago last fall. The following memorial was unanimously adopted by the society at their last meeting:

In the death of Chas. A. Chanter, this society has lost its most ardent and faithful member, a brother whose genial presence will not be forgotten, one who never lost an opportunity to awaken interest in the importance and possibibilities of horticulture.

Mr. Chanter was a man whose soul was attuned to the true and grand in nature. His sympathies were ever in touch with all efforts to uplift and ennoble the minds of men by cultivating a love for the good, the true and the beautiful.

His heart, even warm with love to his fellow man, was alwa s ready to respond to appeals for assistance in interesting the young in the love of flowers and the study of the great world of nature.

Misunderstood by many, censured by the ignorant, he was tenderly loved by those who knew him best.

The highest praise we give to true greatness is its quality of faith. Be it said of our absent brother that he never lost faith in the great work of his life he never lost faith in the power of the love of flowers and ferns to make men better and life happier.

It was this steadfast faith in his mission, that won our hearts, and will be an abiding help to us in our little work which God has assigned to each of us.

As a worker in our society, his place can not be filled, yet his memory will not fade, but be kept as an inspiration to better work and a stronger and brighter faith.

MARY CONWAY, *Sec'y.*
C. W. SMITH, *Pres.*

REPORT OF FREMONT HORTICULTURAL SOCIETY.

We still hold together, and try to keep up our regular meetings, although circumstances for the past year have prevented as general interest in horticultural matters as we could wish. But our members still appreciate the advantages derived from our discussions, and many profit from the lessons learned at our meetings.

But I think that our people are slowly arriving at the conclusion that the raising of "small fruits" is the kind of fruit raising for us to tie to, and are begining to go slow on all varieties of apples not fully tested and proved worthy of our confidence.

The list of even "Waupaca county seedlings" has been materially cut down within the past few years, and will bear still further reduction. There is no doubt but our county still leads in the matter of hardy seedling apples, but we must come to the humiliating conclusion that we have been spreading things a little to thick even for Waupaca county. We could pick out three or four kinds—not half a dozen that we could risk, and which, if properly taken care of and protected, might be made to pay—for a few years—for the life of an apple orchard must of necessity be rather brief in this climate.

Our officers are—President, C. F. Eaton; Vice-president, Paul Scheisser; Secretary, J. Wakefield; Treasurer, Jacob Steiger; Executive Committee H. Spindler, W. A. Springer, G. W. Holmes.

Delegate State Society, J. Wakefield, M. M. Wakefield.

J. WAKEFIELD, *Secretary.*

REPORT OF THE GRAND CHUTE HORTICULTURAL SOCIETY.

The advance in horticulture in this locality is significant of both moral and physical progress, as the abundance of cheap, delicious fruit, takes more and more the place of substances more deleterious.

Owing to the extreme dry weather of the summer of 1891 strawberries were a light crop and somewhat inferior in quality. Raspberries were grown by most of the members, but the yield was very light and the season of short duration. Prices very high. Currants were quite a success with a few who gave them the careful attention necessary to them. Grapes were an abundant crop with some, while a few did not have the same success.

The frost held off until the fruit was matured, consequently there was the finest exhibit of grapes at our grape festival held in October ever witnessed by our society. Winter apples almost a failure. The Duchess and some early apples yielded remarkably well.

Although our fruit growers occasionally meet with reverses, they show an increasing interest in horticulture and each year engage more extensively in its pursuits.

Our meetings have been held quarterly and been quite instructive and largely attended. The annual meeting was held January 5, 1893. The election of officers resulted in the choice of Mr. M. B Johnston, president; C. A. Abbott, vice-president; A. A. Winslow, treasurer.

MRS. C. E. BUSHNELL,
Secretary.

ANNUAL REPORT OF THE BROWN COUNTY HORTICULTURAL AND AGRICULTURAL SOCIETY.

OFFICE OF THE SECRETARY, GREEN BAY, Jan. 28, 1893.

To the Brown County H. and A. Society:

The secretary respectfully submits the following report of the transactions of the society for the year ending December 31, 1892:

I. MEETINGS.

The society has held eight regular meetings during the year at places and dates as follows:

Annual meeting at the residence of President J. M. Smith, Jan. 30;

monthly meetings at the secretary's office, Green Bay, March 26; at Odd Fellows' Home, Green 'Bay, April 30: at the residence of Alexander Barclay, town of DePere, May 28; the ninth annual strawberry festival on the premises of President Smith, Green Bay, July 13; in the grove on the farm of J. D. McAllister, town of Pittsfield, August 27; at the residence of Isaac Dickey, town of De Pere, October 1; at the office of the secretary, Geen Bay, December 3.

II. TOPICS DISCUSSED AND BUSINESS TRANSACTED.

January Meeting—Bussiness. Annual Reports of the Secretary and Treasurer and action thereon; Election of officers for ensuing year; appointment of Ppesident Smith, delegate to the state convention; Paper: "A Tribute of Respect," Mrs. Sarah E. Hutchinson; Discussion; The future operations of the society.

March Meeting—"Proceedings of the state convention," report by the delegate: "Condition of the southern states in respect of agricultnre," description and remarks by President Smith; "To Dear Friends at Home," letter from Mrs. J. M. Smith.

April Meeting—Discussion: "Wheat shall we plant and how shall we plant?"

May Meeting—Investigation: "Shall we grow corn largely for winter feed?" "How late can we safely plant?" "Doing the Twentieth thing," paper by Mrs. J. M. Smith.

July Meeting—"Brown County Agriculture of thirty years ago contrasted with that of to-day," "The Book of the Garden," poetical essay, Mrs. S. D. Hastings.

August Meeting—"The Benefits available to Farmers and their Families from Social Reunions."

October Meeting—"The Lesson of the Season."

December Meeting—Business Provision for Exhibits at the Columbian Exposition; "Comparison of the Husbandry of other States with that of Wisconsin," paper by Mrs. J. M. Smith.

Many collateral subjects have come incidentally before the society, and the monthly meetings have generally been well attended and conducted with interest and success.

III. MEMBERSHIP.

One gentleman has been received into active membership during the past year, and two have been removed by death from all scenes and relations of earth life. This leaves the membership nearly the same as reported at the last annual meeting, consisting of about 65 male and 45 female members.

IV BOOKS, SEEDS, ETC.

Fifty copies of transaction of the State Horticultural Society for 1892 have been received and distributed among the members as opportunity has occurred. Also an ample package of garden seeds from the Agricultural Department of the national government.

FINANCIAL STATEMENT.

RECEIPTS.

Cash in treasury January 1, 1892	$3 81
Cash received for annual dues	35 00
Cash donations and contributions	22 60
Deficit advanced by secretary	3 24
Total cash and receipts	$64 65

DISBURSEMENTS.

Paid for postal notices of meetings	$8 65
Paid for postage stamps	2 00
Paid for order book	1 75
Paid for festival circulars	1 25
Paid for printing annual reports	1 00
Paid secretary's salary	50 00
Total disbursements	$64 65
Balance in treasury January 1, 1893	00

VI. NECROLOGY.

During the year the scythe of the relentless All Reaper has cut down two stalwart members of the society and their names are enrolled in the catalogue of the dead.

Frank Hagemeister was admitted to membership August 14, 1880, and continued in good standing to the day of his death, November 18, 1892, a period of 12 years, 3 months and 4 days.

He was always prompt in the payment of dues, and, until the last two or three years, was an occasional attendant upon the regular meetings of the society, always taking, when present, an active and earnest interest in the matters brought before it for consideration

Daniel Odell became a member May 26, 1883. He died April 20, 1892, having held connection in good standing 11 years, 9 months and 15 days

In the Historical report for the year 1886 was begun a Necrological record of the members of the society, and the names of the first twelve deceased entered in chronological order.

The Record is here continued from that date in like order:

13 August Delforge died August 3, 1887.

14 Col. Wm. Chapman died December 19, 1887.

15 Dr. D. C. Ayers died February 1, 1890.
16 Thomas Bennett died March 31, 1891.
17 Rufus B. Kellogg died September 24, 1891.
18 Alanson F. Lyon died October 6, 1891.
19 Rev. J. G. Henshall died November 6, 1891.
20 Daniel Odell died April 20, 1892.
21 Frank Hagemeister died November 18, 1892.

All these gentlemen were members of the Society in good standing at the time of their decease. Two others terminated their membership previously to their death, making 23 in all, not now living who have held membership in the Society a part of the 19 years of its existence.

VII. CONCLUSION.

This day is the 19th anniversary of that on which the Society was organized, and commenced its career of beneficent labor. Ten gentlemen then made up its membership, of whom four only are known to be now living. These four include the President and Secretary elected at the meeting of organization and ever since annually re-elected to the same offices respectively. They alone of the original ten still retain their connection with the Society. It need not, however, be inferred that official position is the power which has kept them in living membership, even though they be the only life members ever so constituted by the Society.

This incidental mention is here made because an anniversary usually presents a favorable opportunity for review of the past in order to the more appropriate and efficient provision for the future, though in, the present instance, such review of the work of the Horticultural Society would, doubtless, be better deferred till the next annual meeting so that it shall cover two complete decades of its labors. It may not, however, be out of place to rehearse, right here, the original purpose of the Society as declared in Article second of the Constitution, to wit:

"Art. II—The objects of this society shall be, to promote and encourage horticultural tests and knowledge and to diffuse more thorough and correct information in regard to setting out and cultivating fruit, shade and ornamental trees and flowers."

A few years subsequently to its organization there was added to its objects and sphere of operations all that is implied in the additional word "Agricultural" assumed in its title.

Extensive as has been the work of the society in the past and vast as the benefit of that work to the county it can by no means be rationally assumed that its grand mission has been fully accomplished and that there remains nothing more for it to do. On the contrary the labor of the past has widely expanded the field of labor for the future, and manifold greate blessings shall flow upon the people of the c unty by the continued and faithful occupancy of that expanded field of labor.

Brown county has not yet become a perfect Garden of Eden, nor is it to be thought of that its rapid progress towards that delectable condition shall be checked by any heart-failure or by any banishment from that garden, of the grand motive power of such progress

Let all the people, then, cherish and sustain, by will and by deed, as the most efficient motive force they have employed or can employ in the work of its grand mission, the Brown County Horticultural and Agricultural Society.

Respectfully submitted.

WERDEN REYNOLDS,
Secretary.

REPORT OF OMRO HORTICULTURAL SOCIETY.

The officers of this society for the ensuing year are:

O. W. Babcock, President.
L. C. Booth, Vice President.
P. H. Merrill, Secretary.
Mrs. Jos. D. Treleven, Treasurer.

P. H. MERRILL,
Secretary.

Omro, Wis., Jan. 30, 1893.

REPORT OF LEWISTON HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

This society was organized June 5, 1892, by Joseph Brickwell. Regular meetings every third Monday of each month. The following is a list of officers and members:

Joseph Brickwell, President.
Frank Nelson, Vice President.
Cameron Utter, Secretary.
Wm. Dore, Treasurer.
Executive Committee, Peter Genison, Frank Bender, Cris. Leavet.

Names of members, Joseph Brickwell, John Wm. Brickwell, Jas. Colburn, P. Genison, Frank Nelson, Ole Benidickson, James Keach, Cameron Utter, Cris. Leavet, Gerris Leavet, James Hickson, Cam. Utter, L. Shultze, Frank Render, William Dore, Smith Utter.

CAMERON UTTER,
Secretary.

REPORT OF THE RUSHFORD HORTICULTURAL AND IMPROVEMENT SOCIETY.

This society was organized Wednesday, Feb. 15, when the following officers were elected for the year 1893:

A. A. Parsons, President.
A. A. Stone, Vice President
H. H. G. Bradt, Secretary.
I. I. Calhoun, Treasurer.

The time of regular meeting is 2 o'clock on the first Saturday of each month.

H. H G. BRADT,
Secretary.

Eureka, Wis , Feb. 24, 1893.

WAUPACA COUNTY HORTICULTURAL SOCIETY.

Weyauwega, Jan. 28., 1893.

The Waupaca County Horticultural Society met in the engine house and the following officers were elected:

President, G. W. Taggurt.
Vice-President, F Masters.
Secretary, F. A. Harden.
Treasurer, A. Smith.
Executixe Committee, P. Waterson, Wm. Springer, A. Balsley.
Delegate to state meeting, Wm. Springer.

A. V. Balch showed eight or ten varieties of apples and several varieties of grapes in the best of condition, all seedlings.

A. Smith had a very fine basket of apples some seven or eight varieties, all seedlings.

H. A. HARDEN,
Secretary.

REPORT OF MONROE COUNTY HORTICULTURAL SOCIETY.

Our society held its annual meeting in connection with the Farmers' Institute, Sparta, on the evening of January 17th. A short but interesting program was carried out, the leading features of which were as follows:

An original poem by Thos. Phillips, entitled, "A Farmers' Poem." A paper by C. E. Tobey, entitled, "A Start in Horticulture." A talk on the subject of strawberry culture, by W. H. Hachett.n A discussion of "Shall we have a canning Factory?" opened by J. J. Melcher.

Spirited discussions followed the presentation of each subject which covered nearly the whole field of small fruit raising.

The following officers were elected for ensuing year:

President, L. S. Fisher.

Vice-President, C. E. Hanchett.

Secretary, W. H. Hanchett.

Treasurer, C. E. Tobey

Chairman Executive Committee, Z. K. Jewett.

Delegate to State Society Meeting, W. H. Hanchett.

Our society is in a prosperous condition both financially and numerically, and marked interest has always been manifest in its meetings.

Arbor day was observed in most of the village schools of our county, but very few of the district schools.

W. H. HANCHETT,
Secretary.

REPORT OF LODI HORTICULTURAL SOCIETY.

The Lodi Horticultural Society held its annual meeting the first Saturday in January, and elected the following officers:

President, Chas. L. Pearson

Vice-President, G. F. Kimball.

Secretary, Mrs. H. C. R. Chrisler.

Treasurer, Albert Lovering.

The president appointed an executive committee as follows: Mrs. H. C. R. Chrisler, Mrs. A. A. Boyce, Mr. G. A. Perry, Mr John Foote, Mr. Albert Lovering.

In the spring of '92 our society made quite a saving to members by ordering nursery stock at wholesale and will do the same this season.

Our June meeting was addressed by B S. Hoxie and Mrs. Vie H. Campbell. The attendance was good and the meeting was a success.

At the October meeting Hon. Chas. Hirschinger "rolled in apples" and gave some valuable hints on their culture.

A meeting was held March 25th, 1893. G. F. Kimball opened the discussion on garden vegetable; G. A. Perry led the talk on spraying, and Albert Lovering addressed the meeting on the subject of berry culture. Mr. A. G. Tuttle of Baraboo was present and took an active part in the discussions.

For several years past there has not been enough small fruit raised in this locality to supply the home demand, but judging from present indications we will have berries to export this year.

C. L. PEARSON, President.
MRS. H. C. R. CHRISTLER,
Secretary.

REPORT OF SHIOCTON HORTICULTURAL AND IMPROVEMENT SOCIETY.

Officers elected for the present year as follows:
For President, W. D. Boynton.
For Vice-President, Eben E. Rexford.
For Secretary, W. D. Barnes.
For Treasurer, C. F. Anson.
For Executive Board: W. D. Jordan, E. Farnham and Henry Deiner.
Vice-President, Secretary, D. M. Torrey, Adam Burns, Jerry Harrington and Dr. Sorenson.

It is the intention of this Society to hold at least three rousing meetings this coming season, taking up seasonable topics that are of live interest to the people.

W. D. BARNES, *Secretary.*

REPORT OF ADAMS CENTER HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

Officers for 1893:
Robert Galston, President.
J. Carter, Vice-President.
W. E. Bidwell, Secretary.
Andrew Huber, Treasurer.

We have a membership of twenty-five, besides ladies.

W. E. BIDWELL, *Secretary and Librarian.*

Adams Center, January 4th, 1893.

REPORT OF EAU CLAIRE HORTICULTURAL ASSOCIATION.

President, Peter Price, Altoona.
Vice-President, James Bonill, Eau Claire.
Secretary, R. Elwell, Eau Claire.
Treasurer, J. F. Case. Eau Claire.

This association has held monthly meetings during the year. One monthly meeting at its place of meeting, the court house at Eau Claire, and the next meeting at the residence of one of the members.

The meetings have been better attended and the interest in the work of the society has increased. This increase in attendance and interest is mostly caused by the meetings, held with the different members.

The society now numbers twenty-six members. Some fine exhibits of strawberries, raspberries, blackberries and currants were made by members of the society.

The prospects of the future of this society are encouraging, the interest in small fruits is growing, and we hope to make our meetings for the coming year so interesting that all interested in fruits and flowers will be found in with us at every meeting.

R. ELWELL,
Secretary.

EVANSVILLE HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

At the annual meeting held the 3d Tuesday in January 1893.

Prof. J. E. Coleman was elected President.

Henry Campbell, Vice-president.

W. W. McFarlane, Secretary.

Mrs. A. M. Barnes, Treasurer.

Rev. E. J. Scofield and Mrs. B S. Hoxie were appointed committee on program.

W. W. McFARLANE, Secretary.

WAUPACA HORTICULTURAL AND IMPROVEMENT ASSOCIATION.

We are not able to report much progress during the last year, still we maintain our organization and have interesting and profitable meetings. We have about fifty members and the society held two meetings during the year. Shall hold our next meeting February 21. Present officers:

President—W. W. Holmes.

Secretary—T. Rich.

Treasurer—Mrs. S. A. Oaker, (now Mrs. Colby.)

PEOPLE'S HORTICULTURAL AND IMPROVEMENT ASSOCIATION OF LANCASTER.

At the close of the Farmer's Institute, held at Lancaster, Grant county, the People's Horticultural and Improvement Association was organized with fifty members.

Delos Abrams, President.

Chas. B. Harper, Secretary.

Frank Smith, Vice-President.

Mrs. O. Pemberty, Treasurer.

The regular meetings will be held the first and third Saturdays in each month.

CHAS. B. HARPER,
Secretary.

Lancaster, Wis., Jan 28, 1893.

REPORT OF THE EAST FREEDOM HORTICULTURAL SOCIETY.

The East Freedom Horticultural Society at its annual meeting Feb. 25, 1893, elected the following officers:

President, F. Armbraster, Baraboo

Vice-President, C. W. Clark, North Freedom.

Treasurer, August Zoebert, Baraboo.

Secretary, Chas. Hirschinger, Baraboo.

Executive Committee, Herman Voll, L. Roser and Paul Neitzel.

This society holds meetings in school houses and has a membership of 33. It was organized in February, 1863, and has a sufficient amount in the treasury to defray all expenses.

CHAS. HIRSCHINGER,
Secretary.

Baraboo, Sauk county, Wis.

SCHOOL SOCIETIES.

LEDGEVILLE, WIS., May 3d, 1893.

B. S. HOXIE, Evansville, Wis.

We have formed a society in this school; it is to be known by the name of "Ledgeville Horticultural Society," it having ten members. The president is Sarah Campbell of Ledgeville, Wis., the secretary is Nellie Normile, Ledgeville, Wis.

NELLIE NORMILE, Secretary,
Ledgeville Wis.

EAST GIBSON SOCIETY.

Organized May 8, 1893.

J. A. Graibe, President.

Celia Rowiller, Secretary and Treasurer.

REPORTS OF COMMITTEES ON OBSERVATION.

REPORT OF MRS. D. HUNTLEY, APPLETON, WIS.

The season of 1892 was very unfavorable for fruit in many places in Outagamie county. The previous season was very dry, and strawberry plants made but little growth. For this reason, or possibly for some other, of which we know nothing, the plants did not winter well, the beds were in bad condition in the spring.

In May when gardens should be made and berries cultivated, it was so wet that little could be done in the garden or field, and in June when strawberries were in bloom and when first ripening, it rained most of the time. Berries did not ripen well and often could not be picked at the proper time. For these reasons the crop was small, not one-half what it would have been in a favorable season, and prices were higher than usual. The first berries picked the 25th of June brought 16 cents a quart; later they were sold for 11 and 12 cents, and fresh berries seldom went below 10 cents a quart

Those who waited for the fall in prices, which usually comes late in the season, were left without berries for canning.

The Warfield, Wilson, Crescent, Bubach, Cloud and Sharpless are grown in this locality, but most growers prefer Warfield and Wilson.

Raspberries gave promise of a large crop, but they too were injured by the rain. Prices were high all the season; berries sold readily at 10 and 12 cents.

But few black raspberries are grown in this locality. The Marlboro and Cuthbert are considered the best red raspberries.

Currants are not grown in this locality by gardeners or families, as they should be. Whenever seen in the market they bring a higher price than berries. They are more easily picked, and they are not as perishable as berries. These facts should commend them to those who wish to make gardening profitable.

Cherries were a light crop last season, and like currants they are not found often in the farmer's garden.

Apples of certain varieties were abundant. Of the Duchess of Oldenburg there was an immense crop, and prices were lower than for some years. Of Russet and Utter the crop was light.

In many orchards and gardens there were no crab apples of the Transcendent variety. Some trees of Whitney No. 20 bore a light crop which sold readily for $1.20 per bushel. These apples should be grown by every farmer; they are excellent for canning, fine flavor and keep their form when cooked as well as peaches,and they always bring a high price. Montreal Beauty gave us a few apples; quality is fine and they sell readily.

The blight has injured some trees in this locality, especially the Wealthy. The Russian varieties are yet on trial. Grapes were much injured the first of the season by rot and mildew. Applying the Bordeaux mixture prevented this in a measure, but the fruit grew slowly with little prospect of ripening, but later the warm days of September and October perfected nearly all the fruit. The best varieties for Outa amie county are Worden and Moore's Early and Cottage for black grapes; Brighton, Wyoming Red and Massaoit for red grapes, and Niagara for white. These are the most profitable to grow for market; many oth r kinds are desirable for the table.

REPORT OF DANIEL WILLIAMS, SUMMIT, WIS.

The past year has been one of the most unfavorable for the production of fruit in this county. The unusual lack of sunshine, and excessive amount of rain during the months of May and June has had a blighting effect upon all fruit bearing trees and plants. Strawberries raspberries, currants and grapes were not a full crop; perhaps one half of a full crop. Blackberries promised a full crop until the scorching heat and wind, during the last part of July, nearly ruined the berries exposed to the direct influence of the sun and wind. Apples were an entire failure in this part of the state. The trees were in full bloom about the first of June and during the first five days of that month there was not one hour of sunshine and the temperature was much below the average. On many apple trees, the leaves withered and drooped, but were renewed. All such trees made but little new growth of wood, and are in poor condition to withstand the present severe winter. The past spring was an unusually favorable spring for planting trees and p'ants of all kinds the ground being in fine condition and the work was finished before the heavy rains commenced. The dry weather in July prevented strawberries from putting out as full sets of runners as usual but still went into the winter in fair condition. For the past three years I have grown my strawberries in matted rows with good results. This is not practical only in a small way for family use. Have left my blackberries standing without any winter protection for the past two years without any material loss, much less than the injury by mice when covered. There are but few apple trees being planted in the locality, but grapes and strawberries are more abundant each year. All small fruits can be grown here abundantly with ordinary care but not one fourth of the farmers grow enough for their own use It is gratifying to notice that more are being planted every year. There is also an increasing interest in the planting of trees and shrubs for shade and ornament. For this change much credit should be given to the farmers wives and daughters, still there is plenty of room left for the work of missionaries. There is a general lack of interest in horticulture among farmers in this county, but we are hopeful that our horticultural friends will be encouraged in a work of so much importance to the farmers of our state.

REPORT OF SPECIAL COMMITTEE ON SEEDLINGS.

At the meeting of the State Horticultural society held in Madison February 8-9, 1893, William Stamners of Outagamie county showed some fine seedling apples and gave history of same. Your committee has the honor to report upon them as follows (Note we adopted the scale as adopted, used and recommended by the Minnesota State Horticultural society for sizing apples.):

We hereto attach names as chosen for each by Mr. Stamners. From the specimens shown we consider some of them very fine, but cannot as yet recommend them for general cultivation.

No.	Name.	Size.	Quality.
1	Pride of Wisconsin...	5	Very poor; subacid.
2	Bes-ings	4	Good for cooking; good keeper.
3	Star	8	Very poor.
4	Harrison	7	Large; fine for dessert.
5	Cleveland	4	Good; past prime.
6	Gov. Peck.....	5	Very good dessert.
7	Triumph	5	Past prime; large core; good.
8	Wm. McKinley.......	8⅜	Good color almost fac simile of snow.
9	Butler	7	Not seedling, N. W. Greeney.
10	Clark's Seedling......	3	Long keeper; good.
11	Kading's Seedling....	5	Second rate.
12	Center	5	Dry, coarse grained.
13	Dorsey	4	No merit.
14	Jerry Rusk........ ...	4	Lacks flavor; no merit.
15	Vernon...............	6	Good dessert.
16	Rose............	4	Acid; fair.

A. D. BARNES,
J. S. HARRIS,
E. S. GOFF,
Committee.

William Stamners of South Osborn, Outagamie county, sent in sixteen specimens of seedling apples originated by himself or selected in his immediate vicinity. Many of the apples presented a very fine appearance and the president appointed a special committee to examine and report on their merits. It is to be hoped that all persons having seedling apples will take pains to send in specimens at our next annual meeting.

Secretary.

REPORT OF COMMITTEE ON AWARD OF PREMIUMS.

Mr. President: Your committee to examine the fruit on exhibition would report as follows:

O. C. Cook, of Oconto, has six varieties of apples on the tables and we award to him the first premium of $2.00, on plate of wealthy. Mr. Cook has also one seedling which will be noted in report on seedlings.

C. A. Hatch, of Ithaca, shows nine varieties and we award first premium of $2.00 on Newell's and Fameuse; second premium of $1.00 on McMahan, Longfield and Wealthy. A. D. Barnes, of Waupaca, shows two varieties, and we award to him first premium of $2.00 on Northwestern Greening.

A. L. Hatch, of Ithaca, has an exhibition of ten varieties and takes the first premium of $2.00 on Talman Sweet.

Wm. A. Springer, of Fremont, exhibits seven varieties and we award to him first premium of $2.00 on Woolf River, Jonathan and Walbridge.

F. A. Chappell, of Oregon, has six varieties and we award to him first premium on McMahon, Northern Spy, and Longfield, with second premium on Golden Russet, Perry Russet, and Pewaukee.

A. J. Philips, of West Salem, exhibits four varieties and we award to him second premium on Walbridge.

Chas. Hirschinger of Baraboo, has on the tables twenty-five varieties and we award first premium on Golden Russet, Perry Russet, Pewaukee and Alexander, with second premium on Fameuse, Newels, and Talman Sweet. We find four varieties not on the list and to these we award a premium of $1.

Respectfully submitted,

J. L. FISK.
F. C. EDWARDS.
T. RICH.
Committee.

REPORT OF COMMITTEE ON NEW FRUITS.

Members of the Wisconsin Horticultural Society:

Your committee find quite a number of new varieties of apples on our table and report as follows: Seedling apples exhibited by O. C. Cook of Oconto. The original seeds were supposed to be planted by French or Indians, at Marinette county, this state, about fifty years ago. A fine specimen and choice dessert fruit. Flesh very white and fine grained. Flavor excellent. Form round oblate. Color ground light yellow, splashed with varying shades of red. Size 4. Cavity rather deep and regular, season March. We suggest that they be called "Cook" in honor of the grower and propagator.

Seedlings shown by F H. Chappel, of Oregon, Wis., No. 1. Size 5. Good cooking, good keeping, fine firm yellow flesh, fine smooth appearance, yellow ground splashed with red.

No. 2. Size 5. Good fair keeping quality, bright colcred with reddish check.

No. 3. Size 5. Good fair keeper. Color light green.

Seedling of Alexander shown by Wm. A. Springer, of Fremont. No. 1. Size 6. Good cooking. No 4. Size 6. Good keeper.

Seedling from Phil. Watius, of Weyauwega, Wis. Size 3. Rich subacid and choice dessert apple. Excellent keeper. Color brownish red studded with yellowish spots. Form round oblate. Cavity narrow and shallow. Stem medium. Flesh yellow. Very choice.

A. D. BARNES,
J. S. HARRIS,
E. S. GOFF.

FINANCIAL STATEMENT.

Wisconsin State Horticultural Society, to B. S. Hoxie, Secretary.

DR.

February 1, 1892, to February 1, 1893.

Postage and postal cards	$68 00
Express charges	29 82
Stationery	9 00
Printing	32 25
Nursery stock for Trial Stations	33 26
Miscellaneous expenses	47 80
Salary of secretary	300 00
	$520 13

CR.

Received on current expenses	$218 00
Received on salary	225 00
Due on salary	75 00
Due on current expenses	2 13
	$520 13

REPORT OF FINANCE COMMITTEE.

We, the undersigned committee, appointed to examine the books and accounts of the secretary and treasurer, beg leave to report that we have examined the same and find them correct to the best of our knowledge.

Respectfully submitted,

R. J. COE.
L. G. KELLOGG.

In Memoriam.

Professor Charles Archibald Chanter was born at Bedford, Devon, England, in 1836. He belonged to an old and influential country family, his father being Lord Lieutenant of the County of Devon. In early life he acquired a taste for the navy. He received a cadetship in the Royal navy in the year 1850 and was a midshipman aboard Her Majestys ship, the Dido, in the Crimean War. Having met with a serious accident that temporary disabled him, he retired from the service. He acquired a great taste for botany while visiting the various countries and on each voyage he added to his rare and valuable collection of plants and ferns. After having retired from the navy he was free to carry out his inclination to prosecute his favorite study of horticulture.

In 1880 he came to America with the thought uppermost in his mind to develop his knowledge and increase his collection of ferns and flowers. In 1890, he removed to Kilbourn City, where he resided until the time of his death, December 11, 1892.

The varied and beautiful scenery of the Dells of Wisconsin were a source of unending delight to him. He was president of the State Chapter of the Agassiz Society and one year ago was made an honorary life member of the Wisconsin Horticultural Society. At the time of his death he was preparing a collection of fine and rare specimens of ferns for exhibition at the Columbian Exposition

Prof. Chanter was a student of nature in the truest sense of the term; he lived close to Nature's great heart and had won many of her secrets, and was, to the close of his life, thrilled and dominated by the beauty of the outside world. It was not unfrequent for him to spend the whole day seeking for some rare and valuable specimen of fern or other plant which he knew was coyly hiding away from the untrained eye.

Possessed of the kindly, sensitive temperament common to those who "dwell with Nature," he was generous to a fault, ever willing to bestow sympathy and aid upon those less fortunate than himself.

He was the author of several valuable papers on ferns that are highly prized by the societies for which they were written. Besides the several collections of ferns he made in this country he left a very rare and valuable collection in England, composed of ferns gathered in every port which he visited.

The strong horticultural society at Kilbourn City owes its success to his efforts. Although enthusiastic, he saw with prophetic eye the benefits that would result from such an organization, not only to those engaged in the profession of horticulture for profit, but also the elevating and refining influence upon the young people.

From a little sketch of Prof. Chanter's life which has recently come to me, I glean these words: "His whole heart and life was devoted to his favorite study, everything being secondary and subservient to the one prominent idea. He was content to live in the simplest manner that he might devote his time to his favorite pursuit." His memory will be cherished by those with whom he was associated and there are many who regret his untimely death.

ORGANIZATION

OF THE

WISCONSIN FORESTRY ASSOCIATION.

At the close of the meeting in the Assembly Chamber, February 9, Secretary B. S. Hoxie invited those present who wished to confer as to the propriety of a foresty association for the state of Wisconsin to meet in the library room of the society to take such action as the conference might decide upon. Quite a number responded to the invitation and the record of the proceedings is worthy of a place in our volume—SECRETARY.

ROOMS OF THE STATE HORTICULTURAL SOCIETY,
CAPITOL BUILDING, MADISON, WIS., FEBRUARY 9, 1893.

M. A. Thayer, of Sparta; B. S. Hoxie and Mrs. Vie H. Campbell, of Evansville; W. D. Boynton, of Shiocton; O. F. Brand, of Minnesota; Mr. and Mrs. Daniel Huntley, of Appleton; W. A. Ramsey, of Kilbourne City; Mrs. J. Montgomery Smith, of Mineral Point, and Messrs. E. J. Schofield, Jacob Huffman, Carl H. Potter, E. C. Taintor, C. A. Hutchins, C. F. Hutchins and L. S. Cheney, of Madison, met at the time and place named above for the purpose of considering the advisibility of attempting the organization of a society for the promotion of interest in the forests of Wisconsin and in the care, protection and proper use of the same.

B. S. Hoxie called to order, stating the objects of the meeting. A temporary organization was perfected by the election of B. S. Hoxie as chairman and L. S. Cheney as secretary.

After some general discussion a motion by Mr. C. F. Hutchins was entertained, empowering the president to appoint a committee of not less than five (which shall include president and secretary) to confer with prominent men in various parts of the state concerning the advisibility of the permanent organization of a forestry association; the appointment of a meeting for such organization if found expedient, and the drafting of a constitution and by-laws for such organization prevailed. The president appointed to that committee M. A. Thayer, C. A. Hutchins and W. D. Boynton.

The society adjourned subject to the call of the committee.

L. S. CHENEY,
Temporary Secretary.

CIRCULAR LETTER.

MADISON, Wis., Feb. 16, 1893.

DEAR SIR:—

At a recent meeting of the Horticultural Society, a temporary organization of those interested in the formation of a permanent Forestry Association, was effected. It was thought that such an organization might subserve public good by arousing public sentiment against the wanton destruction of our forests and by inducing needed legislation to preserve them against the disastrous effects of forest fires. It was hoped that through circulars and public addresses such a society might be influential in educating the people to a better appreciation of the economic value and of the beauty and grandeur of trees and forests; that something might be done in this way to preserve and extend our forest areas; that when people came to appreciate the climatic and economic value of forests, of their contributions to every field of industry, of the worth of the woods as the sources of pure air and of water supplies for springs, brooks and rivers, that they would be stimulated to plant trees by the wayside and to cover the sterile portions of the state and the barren hillsides with trees. It is hoped, moreover, that such an association may aid in securing the needed legislation to prevent the stripping of timber from state lands and the disastrous spread of forest fires.

It is the purpose of those interested in this movement to call an early meeting of all who are willing to co operate in such an enterprise, at which addresses shall be given, setting forth the worth of the woods and the danger which threatens the salubrity of the climate and the fertility of the soil, if the unwise and unthoughtful desolation of forest areas shall continue.

If the objects aimed at by such an association, meet your approval and you are willing to co-operate in the execution of its purposes, I should be glad if you will favor me with such assurance.

May I trust your courtesy for an early reply to this communication as it is the intention of those interested to call together the friends of such a movement while the legislature is in session and free transportation may be obtained by those who are willing to attend such a meeting.

L. S. CHENEY,
Secretary.

CALL.

MADISON, Wis., March 23, 1893.

At the close of the winter meeting of the Wisconsin State Horticultural Society, a few persons met in the room of the society and perfected the temporary organization of a State Forestry Association. A committee was appointed to correspond with prominent persons throughout the state as to the advisability of forming a permanent forestry association at the present time, and to call a meeting for such organization if deemed practicable.

A circular letter was prepared and sent to all parts of the state. The responses to this letter have been so uniformly favorable to the proposed organization that the committee has decided to issue this call for a general meeting, to be held at Madison, on Thursday evening, April 6th.

It is earnestly hoped that all who desire to see the wanton or thoughtless destruction of our forests stopped; the planting of trees encouraged, and a proper appreciation of the benefits to be derived from trees and forests instilled into the minds of all, will be present at this meeting. Prof. J. J. Blaisdell, of Beloit College, has consented to address the meeting. There will be other short addresses by leading citizens of Madison and the state. You are most cordially invited to be present and assist in the organization of the Wisconsin State Forestry Association.

B. S. HOXIE, Evansville,
M. A. THAYER, Sparta,
C. A. HUTCHINS, Madison,
W. D. BOYNTON, Shiocton,
L S. CHENEY, Madison,
Committee.

SECOND MEETING, APRIL 6.

ROOMS OF THE STATE AGRICULTURAL SOCIETY, CAPITOL BUILDING, MADISON, WIS., APRIL 6, 1893.

Pursuant to call issued by committee appointed at time of temporary organization of the Wisconsin State Forrestry Association (Feb. 9), that association at time and place indicated above was called to order by temporary chairman, B. S. Hoxie.

Minutes of preceding meeting read and approved.

The report of the committee appointed to draft constitution adopted.

A nominating committee consisting of C. A. Hutchins, John M. Olin and E. S. Goff appointed, after which Prof. J. J. Blaisdell, of Beloit, delivered an address entitled "Forest and Tree Culture in Wisconsin." At the close of the address those present engaged in a general discussion of it and the entire subject of forestry.

Hon. H. C. Putnam stated at some length a plan of his for securing to the state the control of large tract of land for forest culture purposes.

The committee on nominations reported as follows: For president, Paul Bechtner, of Milwaukee; vice president, B. S. Hoxie, of Evansville; treasurer, C. R. Barnes, of Madison; secretary L. S. Cheney, of Madison, and the three additional members of the executive committee, H. C. Putnam, of Eau Claire; Albert Salisbury, of Whitewater, and Moses Hooper,* of Oshkosh. Report of committee adopted and the persons named declared elected to the respective offices for which they were named.

A committee of three consisting of Pres. Bechtner, H. C. Putnam and C. A. Hutchins was appointed to formulate and publish in pamphlet form the remarks of Mr. Putnam.

On motion the matter of calling a summer meeting was left to executive committee.

The publication of Prof. Blaisdell's paper was referred to the president with full authority to act in the matter.

Society adjourned.

L S. CHENEY, *Secretary.*

CONSTITUTION OF THE STATE FORESTRY ASSOCIATION.

ARTICLE 1—This Association shall be known as The Wisconsin State Forestry Association.

ARTICLE 2—The objects of this Association shall be the discussion of subjects relating to tree-planting; the conservation, management and renewal of forests; the climatic and other influences that affect their welfare; the collection of forest statistics; the advancement of educational, legislative or other measures tending to the promotion of these objects; and the dissemination of information relating to the economic, climatic and æsthetic value of trees and forests.

ARTICLE 3—Any person who is willing to further the purposes of this Association may become a member by forwarding his name and the annual dues to the Secretary. The annual dues shall be two dollars.

ARTICLE 4—The officers of this Association shall be a President, a Vice-President, a Treasurer, and a Secretary. An executive committee, consisting of the officers and three other members, shall be elected at each annual session of the Association. This committee shall choose its own chairman, and a majority of its members shall constitute a quorum.

ARTICLE 5—The duties of the President, Vice-President and Secretary, shall be those ordinarily performed by such officers.

ARTICLE 6—The Treasurer shall receive and have the custody of all funds belonging to the society, and pay out the same on the direction of the Executive Committee.

ARTICLE 7—The officers of this Association shall be elected at its annual meeting, and shall hold office until the next annual meeting and until their successors are elected. In case a vacancy occurs in any office in the interval between the annual meetings, such vacancy may be filled by the Executive Committee.

ARTICLE 8—An annual session of this Association shall be held at such time and place as shall be determined by a vote of the Association at its general meeting, or, in the absence of such determination, at the call of the Executive Committee.

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*Mr. Hooper resigned, and the vacancy was filled by the election of C. A. Hutchins.

ARTICLE 9—The Association, at any regular meeting, or the Executive Committee in the intervals between regular meetings, may appoint such special committees as may be deemed proper, and shall define their duties.

ARTICLE 10—This constitution may be amended by a two-thirds vote of the members present at any annual meeting.

AN APPEAL TO THE PEOPLE OF WISCONSIN.

WISCONSIN FORESTRY ASSOCIATION.

DEAR SIR:—On the sixth of April, 1893 a Forestry Association was organized in the city of Madison, whose purposes are set forth in the second article of its constitution. The association can offer to its members neither the rewards of pecuniary gain nor of political preferment. It can appeal only to those who are influenced by care for public good, and who feel the weight of the obligation that requires each generation to pass on unimpaired the inheritance that it received from the past. Those interested in this movement believe that the uncovering of our forest areas will have a marked effect in impairing the salubrity of our climate, in increasing the extremes of heat and cold, and in diminishing the flow of our rivers and the fertility of our soil The economic advantages accruing from a constant supply of timber products are apparent, but these can be secured to the state only by protecting the scattered remnants of our once glorious forests from wanton depredation, and from the disastrous effects of forest fires. It is no longer doubtful that these results *can* be secured by an intelligent system of forestry, such as has proved successful in other countries. The state still owns a little more than six hundred and seven thousand acres of land, about six hundred thousand of which lie in the timber belt. Some of this land is covered with pine and other valuable woods, some of it is nearly worthless, and some of it has been denuded of its timber. But nature would provide new forest covers if these lands were protected with intelligent care.

A bill was introduced in the last legislature, providing for the withdrawal of all state lands from the market until their condition and present worth could be estimated. The bill failed to become a law, but it is generally conceded that some legislation is necessary to secure to the state the actual value of these lands. While some of them are worthless except for forestry, others are covered with valuable timber that is worth many times the price for which the lands are sold. There can be little doubt that an intelligent examination of these lands would show that the interest of the state would be subserved by increasing, greatly, the price of those that are well wooded, and by devoting to tree culture those that are adapted to it, and are nearly worthless now.

Another bill provided for the sale of the lands embraced in the State Park. These Park lands are somewhat scattered, but all of them lie in the lake region that constitutes the water supply of the Wisconsin river system. The whole region is nearly worthless for farming purposes; but as a timber preserve, as a reservoir whence the great rivers of the state may draw unfailing supplies, as a green wall protecting it from the desolating sweep of winter and summer winds, it would be invaluable. The bill to bring the Park lands into market also failed, but, unless some provision is made to protect and care for them, the wealth and prosperity that they might confer will, almost surely, be sacrificed to the pittance that the state can realize from their sale. Geneneral government still owns a half million acres within our borders, and nearly all of these lands lie in the forest area, and many of them at or near the source of our rivers. The value of these lands exceeds but little the worth of their standing timber. Doubtless the control of many of these lands would be surrendered to the state if assurance were given that they would be set apart and cared for as forest preserves-

It is thought that lumbermen who own large tracts from which the timber has been stripped would quitclaim their interests for a nominal sum, and that other tracts that have lapsed on acconnt of the non payment of taxes could be recovered if the state would devote and preserve them to the interests of tree culture. This requires that the state shall adopt and execute carefully prepared plans for forest culture.

There are millions of acres of hillside and sterile lands in the state that are worthless for agricultural purposes but are adapted to tree culture. It is thought that an association that shall embrace in its membership representative men and women, may be useful in securing needed legislation, in awakening appreciation of the danger that threatens the prosperity of the commonwealth if the thoughtless or wanton destruction of forests continue, in circulating information concerning the economic and climatic value of trees and forests, and in educating a public sentiment that shall lead to the planting and care of trees by the wayside and over the waste places.

If you are in sympathy with the purposes of the association, and are willing to co operate in their execution, please to send your name to the secretary. You will find a copy of the constitution enclosed.

Yours respectfully,

PAUL BETCHNER,
C. H. PUTNAM,
C. A. HUTCHINS,
Committee.

[Extract from address before the real estate congress at Nashville, February 15, 1892.]

By B. F. FERNOW, DIVISION OF FORESTRY, Washington, D. C.

"The area of timberland in the United States, although changing daily by clearing of new farms and by relapsing of old ones into woodland, may roughly be placed at 500,000,000 acres. Even if we were to class as timberland all the land not occupied by farms or known to be without tree growth, this figure cannot be increased more than 60 per cent., that is, the utmost possibility of the natural woodlands in the United States must be within 800,000,000 acres. The former figure, however, comes probably much nearer the truth. How much of this area contains available merchantable timber it is impossible to tell, or even to guess at. We only know that supplies of certain kinds are waning. For instance the white pine of the north shows signs of exhaustion, the white ash has become scarce in many localities, the Tulip poplar will not last long and the black walnut has ceased to be abundant. All we can do is to estimate the range of possibilities.

"With the utmost stretch of imagination as to the capacity of wood crops per acre, if we allow even the entire area of half a billion acres to be fully timbered and keep in mind the enormous yields of the Pacific Coast forests, 1,250 billion cubic feet of wood is all that could be crowded upon that area. This figure would far exceed the most highly colored advertisement of a dealer in timberlands, except on the Pacific Coast: in fact he would be afraid to assert one-half as much, for it would make the average cut of timber per acre through the whole country 10,000 ft. B. M. The above figure in cubic feet represents wood of every description, allowing as high as 33⅓ per cent. for saw timber.

"Since we consume between twenty and twenty-five billion cubic feet of wood of every description annually, fifty to sixty years would exhaust our supplies. even if they were as large as here assumed and if there were no additional growth to replace that cut and no additional increase of consumption. Regarding the latter, it may be of interest to state that acording to as careful an estimate as I have been able to make upon the basis of census figures and other means of information the increase in the rate of consumption of all kinds of forest products during three census years expressed in money values was from round $500,000,000 worth in 1860, to $700,000,000 worth in 1870, and $900,000,000 in 1880, whille for 1890 it may probably reach $1,200,000,000, an increase of about 30 per cent for every decade or somewhat more than the increase of population, which may in part be explained by higher prices.

"It will also aid us in our conception of the situation to know that the sawmill capacity of the country in 1887 was round 200,000,000 feet B. M. daily, which again may be figured equivalent to a probable consumption of wood of all kinds to the amount of at least 20,000,000 cubic feet round.

It remains to be seen what the chances are of supplying ourselves from the natural reproduction of our present forest area.

"I have shown elsewhere that while under the careful management of the German forest administrations the average yearly new growth per acre is computed at 50 cubic feet per acre, or 2.3 cubic feet for every 100 cubic feet standing timber, we can here, where there is no management at all, where fire and cattle destroy not only young growth but also the fertility of the soil, in spite of the originally greater reproductive power, expect no such annual crop.

"From my observations I would not admit that more than one-half such annual growth is realized on the average over the whole area of 500,000,000 acres, and the likelihood is that much less is reproduced per acre.

"Hence, while 500,000,000 acres reserved as forest at the very best would satisfy our annual consumption of 25,000,000,000 cubic feet—we need some 5,000,000,000 feet to supply our annual conflagrations—we are presumably cutting into our capital at the rate of at least 50 per cent. per year. What do these figures mean with reference to the subject in question? Simply this, that while as yet prices for timberlands and still less the price of lumber are by no means advancing in proportion to the constantly growing reduction of standing timber supplies, when the general truth of these figures is recogized, which cannot fail to occur soon, timberlands will appreciate rapidly in value and lumbermen especially in the South will regret their folly of having marketed their best supplies at unprofitable and unsatisfactory margins."

COMBATING THE FUNGOUS DISEASES OF PLANTS: PROGRESS OF THE WORK IN THE UNITED STATES.*

By B. T. GALLOWAY, Chief of the Division of Vegetable Pathology, United State Department of Agriculture, Washington, D. C.

It is my purpose to lay before you to-day the present condition of our knowledge concerning the most approved methods of combating some of the important fungous diseases of plants. The nature of fungi and the manner in which they produce the various diseases we call blights, mildews, rots, etc., are already generally known to you; consequently it hardly seems necessary to go over this ground again. Doubtless the question of greatest importance to all growers of fruits, flowers and vegetables, is, how can such crops be protected from the ravages of fungi in the most economical and practical manner? This question I shall try to answer, but before taking up the matter in detail it would perhaps be well to clearly define the limitation of our discussion.

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* From Massachusetts Horticultural Report, 1893.

For convenience the diseases with which we are especially concerned may be divided into two classes, viz. (1), those recurring year after year independently of climatic or other conditions, and (2), those whose prevalence and destructiveness depend more or less on the weather, the soil, and other surroundings. Examples of the first class may be found in black-rot of the grape; leaf-blight of the pear, quince, cherry and plum; black-spot of the rose, etc. To the second class may be referred such diseases as downy mildew of the grape, potato rot, downy mildew and rot of lettuce, and numerous others which I need not mention here. Of course it must be understood that no sharp line of distinction can be drawn between these classes, since what in one section may properly belong to the first, may in another be referred with equal propriety to the second, and *vice versa*.

It is obvious that the maladies belonging to the first class are more easily combated than those of the second; first, because they appear every season at about the same time, and second, because their progress is more or less regular; therefore, when certain phases in their development occur it is known what to expect. In diseases dependent on climatic and other similar conditions there is an element of uncertainity that often completely baffles the horticulturist. Not knowing what to expect he seldom prepares for anything; consequently before he is aware of it his crops are destroyed.

In the matter of treatment practically the same methods are followed in each class, the only difference being that it is possible in one instance to obtain good results by following certain rules, while in the other success depends largely on the exercise of proper judgment in connection with the rules given. A careful study of the weather, the soil, and other conditions which influence plant growth will in many cases enable the intelligent fruit grower to cope as succefsfully with one class of diseases as another.

In a sudy of the weather the daily maps issued under the direction of the United States Department of Agriculture in many of the large cities will be of the greatest service. A striking example of the use to which these maps may be put is to be found in the vicinity of this city, where acres are devoted to the forcing of lettuce under glass.

It is well known that lettuce grown in this way is subject to several diseases which almost invariably manifest themselves under certain partially known conditions of moisture and heat. Every lettuce grower is aware that during the short winter days constant care as regards watering and ventilating is necessery to keep the plants free from rot, mildew, and burn. In all of this work it would be of the greatest service to know when to expect good or bad weather. For example, the sun may be shining brightly, with no indication whatever of cloudy weather; water is applied and immediately it turns cloudy and cold, remaining so for perhaps a week or more. The top soil, under these conditions, does not dry out and as a result rot sets in, and in a very short time the whole crop may be destroyed or rendered worthless. If the cloudy weather could have been foreseen, water might have been withheld and in such a case the plants might have passed through the unfavorable conditions in good shape. By the aid of the maps a gardener, with his knowledge of local meteorological conditions derived from long and continuous observations, might without difficulty have determined from ten to twenty-four hours in advance the coming of just such weather as we have here described. The forecasts, telegraphed over the country and published in the daily papers and elsewhere, are so brief that they do not enable the horticulturist to exercise his judgment at all. With a map before him, however, he has a bird's eye view of the situation. He sees approaching, a storm area covering thousands of square miles. He can tell pretty accurately how fast this storm is traveling, and can therefore, with a reasonable degree of certainty, predict when its influence will be felt in his region, Further, he can usually tell whether the disturbance will bring rain or snow, much wind or little wind, and the direction from which the latter will blow. All this a few years ago would have seemed incredible, and yet it is possible at the present time for any one who has access to the bulletins issued, and who will use his knowledge of local meteorology to the best advantage, to correctly forecast all the foregoing conditions, at least eighty times out of a hundred. I have dwelt upon this matter at some length because it seems to me an important one, there being nothing so intimately associated with horticulture in all its phases as the weather. This is especially the case with plant diseases, and yet, despite the importance of the matter, very little is definitely known in regard to the direct relationship existing between plant maladies and weather conditions. A long series of observations will be necessary to establish these relations, and when this is accomplished it may even be possible to predict accurately for some time in advance when a certain disease is likely to appear. This of course will be a great step in advance of our present methods so far as treatment is concerned, and will practically place all diseases on the same footing.

Having now pointed out the differences existing between the two classes of plant diseases, let us consider the methods that may be adopted in preventing them. I shall leave out of consideration entirely methods of culture, taking it for granted that every fruit grower, market gardener and florist will, in this respect, give his plants the very best treatment possible. Having done this he may rest assured that for the prevention of some diseases his work will be less difficult, while for others his cares and labors will not be lessened at all. You will observe that the word prevent is used in all cases. Few, if any, of the diseases with which we are concerned can be cured, which at once shows how radically different our treatments must be from the ordinary methods pursued in fighting insects. As in the case of the latter, however, when this work was begun, attention was immediately turned to the use of preparations in the form of powders and liquids, which when applied to the plants would protect them from the attacks of their parasitic fungous foes. On its face the problem does not seem like a difficult one, yet when it is looked into carefully it will be seen that the obstacles to be overcome are exceedingly numerous. It was important to find substances that would destroy or render incapable of growth the spores or reproductive bodies of fungi without injuring the plant to which these substances were applied. Further, it was necessary to determine when to apply the substances, how to apply them, and, finally, to ascertain their effects on the crop from a hygienic stand-point. The general results of this work will now be given, it being understood, of course, that perfection has not been reached in any branch of the subject.

Turning our attention first to the preparations employed as fungicides, it may be said that fully a hundred liquids and powders have been used in this country alone for work of this kind.

For work out of doors the powders were soon discarded, as it was found that they were all too easily removed by rain, wind and dew. The liquids, consisting of various compounds of copper, iron, zinc, etc., were tried with varying degrees of success. Some were found to be of no value whatever; others so seriously injured the plants that their use was abandoned. Several seemed to be efficient fungicides, but owing to the fact that they were easily removed or were too expensive, it was necessary to discontinue their use. Strange as it may seem there is but one preparation that has stood the test of every trial, and it may be placed to-day at the head of all other fungicides. I refer to the Bordeaux mixture, which is fast becoming almost a household word among the fruit growers of the country. There are preparations cheaper, more easily applied, and possessing greater wetting power* than the fungicide mentioned, but they either lack in efficiency or prove injurious when applied continuously. Bordeaux mixture, as most of you are aware, is made by adding milk of lime to a solution of bluestone or sulphate of copper. The original formula called for 16 pounds of copper sulphate and 30 pounds of lime to 22 gallons of water. These amounts have been reduced, from time to time, until now we use almost entirely a mixture containing 8 pounds of copper sulphate and six pounds of lime to 50 gallons of water. The copper sulphate, which may be obtained in granular form at wholesale at 4 cents per pound, is dissolved in 7 or 8 gallons of water, a 50 gallon barrel being used for the purpose. The lime is slacked in a separate vessel and after thinning to the consistency of whitewash it is poured into the barrel containing the copper sulphate solution and the two liquids are thoroughly mixed, after which enough water is added to fill the barrel. It only remains now to strain the mixture, when it is ready for use. The last operation is frequently omitted entirely, but it certainly saves time in the end to strain out the bits of lime, sticks and straws, which clog the nozzle and give trouble in other ways. Our custom is to strain through a gunny sack tied over the head of a barrel, the latter having been made perfectly clean by rinsing with water. Frequently when lime of poor quality is used there is some free copper sulphate present in the mixture, and if such is the case tender foliage is likely to be injured. It is very seldom, however, that anything of this kind happens, but to be on the safe side it is best to test the mixture for free copper sulphate before using. This may be done very quickly and easily by adding to the mixture a few drops of a solution of potassium ferrocyanide or yellow prussiate of potash. If there be the least trace of free copper sulphate present a brick-red color is noticed as soon as the potassium ferrocyanide solution is added. If the mixture has been properly made there is no change whatever in color. An ounce of the potassium ferrocyanide dissolved in four ounces of water will answer for testing a hundred barrels of the mixture. Four ounces of the solution having the strength indicated should not cost more than 10 or fifteen cents. Paying 4 cents per pound for copper sulphate and from 15 to 20 cents per bushels for lime, Bordeaux mixture prepared in accordance with the foregoing formula will not cost over 1 cent per gallon.

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*By wetting power is meant, in this connection, the property liquids possess of spreading evenly over any surface with which they may come in contact. It is something more than mere adhesiveness, for a liquid may possess this quality to a high degree and yet roll up in drops when it strikes a leaf. The drops adhere, but the leaf is not wet at all except in limited areas.

Only one other fungicide is worthy of mention here and that is the ammoniacal solution of copper carbonate. It is made by dissolving 5 ounces of copper carbonate in 3 pints of strong ammonia and then diluting with water to 50 gallons. Before adding the ammonia it is best to stir up the copper carbonate in sufficient water to form a thin paste. If the quantity of ammonia indicated does not produce a clear solution more should be added until this is brought about. The chief points in favor of this fungicide are, (1) ease of preparation and application, (2) cheapness, and (3) the property it possesses of not discoloring the parts of the plants to which it is applied. On the other hand the strongest objection to its extended use is that it sometimes injures the plants upon which it is sprayed. Grapes, for example, sprayed an extire season with it may in all probability be entirely free from disease due to fungous attacks, yet as a rule they do not appear healthy, the leaves in many cases being small yellow and the wood more or less imperfectly matured. Careful experiments have demonstrated that these appearances are due to the continuous action of the solution on the tender growing parts of the plant. It is frequently more noticeable the second year than the first and is of course much more plainly marked on certain plants and certain varieties than others. It is believed that at times the solution can be used to advantage without fear of injury to the plants. This matter, however, will be more fully discussed as we proceed.

Having now given you the present condition of our knowledge with respect to the most serviceable fungicides, your attention is called to the second phase of our subject, *i. e.*, when and how to apply these preparations. In a lecturs of this kind it is of course impracticable to describe in detail the methods that should be followed in treating each particular disease. The matter only can be considered in a somewhat general way, such information being given as will enable those interested to obtain a clear insight into the nature of the work. As to the proper time for spraying no rigid rules can be laid down. It must be understood that the whole object of the work, as already stated, is prevention; therefore the great importance of doing everything in time can not be too strongly urged. A grape, for example, no sooner puts forth its leaves than the spores of the black rot fungus are ready to infect them. The same is true of the berries as soon as they form; therefore to protect both leaves and berries it is necessary to begin spraying at least a week or ten days before the fungus usually appears. Experience has shown that this period coincides quite closely with the time when the leaves are one third grown; consequently we recommend in all of our publications that the first treatment be made as near as possible to the date mentioned. In ten or twelve days the vines will have made sufficient growth to require a second application, and so the work is continued until five or six treatments in all have been made. Practically this plan is followed in all of our work, the number of applications and the times at which they are made varying with the different crops.*

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* DIRECTIONS FOR TREATING SEVERAL IMPORTANT PLANT DISEASES.

APPLE BITTER ROT, *Glœosporium fructigenum* Berk.

Remove from the trees and destroy during the winter or early spring all shriveled apples. Spray with Bordeaux mixture, first when the fruit is the size of marbles, again in two weeks, and a third time a month later. The rotten apples that fall to the ground during the growing season should be collected and fed to the hogs or destroyed The cost of the treatment for ordinary-sized trees will be about 10 to 15 cents each.

APPLE LEAF SPOT, *Phyllosticta, Phoma, etc.*

Spraying with Bordeaux mixture the same as for bitter rot will usually hold this disease in check. It would probably be well, however, to allow only two weeks to elapse between the time of the second and third sprayings. If the season is rainy a fourth spraying should be made three weeks after the third.

APPLE POWDERY MILDEW, *Podosphœra oxyacanthœ* (DC.) D By.

This disease is troublesome only in the nursery, where it is especially injurious to seedlings. Spray with ammoniacal solution of copper carbonate; first when the leaves begin to unfold and thereafter at intervals of two weeks until five or six treatments in all have been made. Endeavor to make about four sprayings before budding the stocks and two after this operation has been performed. The cost of six treatments, using proper machinery, should not exceed 6 or 8 cents per thousand trees.

APPLE SCAB, *Fusicladium dendriticum* (Wallr.) Fckl.

Spray with Bordeaux mixture; first, just as the flower buds begin to open; second when the petals of the flower are falling, and third when the fruit is the size of peas or slightly larger. If the season be rainy a fourth treatment should be given ten or twelve days after the third. Four ounces of Paris green added to each 50 gallons of the mixture at the time of the third spraying will hold the codling moth in check. The

Bordeaux mixture is the principal fungicide used and it can be recommended unqualifiedly for all the diseases with which we are especially concerned. In certain cases, as for example the treatment of black rot of the grape, the cost of the work can be materially decreased by using both Bordeaux mixture and ammoniacal solution. The former should be applied two or three times in the early part of the season while the latter may be used for the later applications. Treatments carried out in accordance with this plan rarely injure the most tender plants; moreover they have the special advantage of not spotting or otherwise disfiguring the fruit at a time when such disfigurement is likely to decrease its market value.

Probably one of the most important questions in connection with the work uuder consideration is the manner in which the fungicides are applied. Every precaution should be taken in preparing the mixtures, solutions, etc. They may be applied at just the right time, and yet unless the work be properly done, in nine cases out of ten failure will result. When we first began to apply fungicides there were no machines entirely suited to the work. In many cases old brooms, wisps of straw, watering cans, syringes, and various other contrivances were used as a means of distributing the preparations, the result being in many cases imperfect work and consquent lack of success in holding the diseases in check.

It should be borne in mind that to be effective a fungicide be applied in such a manner that all parts of the plant exposed to the attacks of the fungus are thoroughly protected. In other words the ideal in this matter is attained when the preparation applied forms an even film over the entire surface of the leaf, fruit, or other part of the plant it is intended to protect. For many reasons it is difficult to attain the ideal yet it may safely be put down that, other things being equal, the more finely the liquid is divided as it is thrown upon the plant the more evenly will it be distributed. To break up the liquid into a mist-like spray requires aspe-

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Paris green should first be made into a thin paste by adding a little water. This paste readily unites with the mixture and does not seem to decrease its value in any way. The cost of the work as here described will range from 4 to 5 cents per tree for each application.

CHERRY LEAF BLIGHT, *Cylindrosporium padi* Karst.

In the nursery, spray with Boardeaux mixture; first when the leaves are about one-third grown. In two weeks spray again, following with a third application fifteen days later. Adopting this plan, three sprayings will be made before budding, after which two more applications at intervals of two or three weeks should be given. In the orchard four or five applications of the Boardeaux mixture should be made, beginning when the leaves first appear and repeating at intervals of two weeks to twenty days. The cost of treating unbudded nursery stock usually averages from 20 to 25 cents per thousand trees. The second year the cost will be slightly more as the buds will make more growth than the stocks. The third year's treatment will average from 30 to 35 cents per thousand trees. In the orchard full bearing trees may be sprayed as described above, at a cost of from 12 to 15 cents each.

cially constructed nozzle and a good strong force-pump. The nozzle in addition to being durable, inexpensive, and simple in construction, must be provided with some means of quickly removing any obstruction that may lodge in the necessarily small orifice through which the liquid is forced. All these requirements are found in the Vermorel nozzle, which has from time to time time been improved until now it is well nigh perfect. The style of pump to be used depends somewhat on the nature of the work in view. For an all round apparatus, involving work on moderately low-growing crops, such as dwarf pears, grapes, raspberries, blackberries, strawberries, potatoes, etc , we have found nothing better than the knapsack form of sprayer. If there are twenty-five or thirty acres of such crops to treat, however, it will pay to use horse power machines. These are now on the market in various styles, ranging in price from $50 to $75. Some of these machines are automatic, *i. e.*, force the liquids through the nozzle or nozzles by means of pumps operated by specially constructed gearing. As a rule we have not found this style of apparatus very satisfactory, as it offers little opportunity to properly control the spray. It is, moreover, expensive, and being necessarily complicated is apt to get out of order. The most satisfactory apparatus we have used for general work is a simple one, which may readily be constructed at home. Is consists of a barrel, mounted head up, on either light truck wheels or a sled made of heavy, durable timber. In case wheels are used the barrel should be swung between them so that its bottom will rest about eight inches from the ground. Barrels mounted in this way and designed to be drawn either by hand or horse-power may be obtained from almost any seedsman.

Having procured and mounted the barrel, the next important step is to attach a good, strong, durable, double-acting force pump, provided with

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CHERRY ROT, *Monilia fructigena* Pers.

This has proved a difficult disease to treat. It causes the greatest loss in rainy seasons, appearing suddenly and destroying great quantities of fruit just about the time the ripening process begins. Some benefit has resulted from the use of Bordeaux mixture, applied every six or eight days, beginning twelve or fifteen days before the cherries ripen. It has proved very difficult to make the mixture stick to the fruit and doubtless this is the chief reason why the rot has not been more readily prevented. As a means of increasing the wetting power of the mixture it is suggested that two or three bars of Ivory soap be added to each 50 gallons of mixture. The soap should be first shaved up and melted in about a gallon of water. Add the melted soap to the Bordeaux mixture and stir thoroughly in order to effect a perfect union.

GRAPE BLACK ROT, *Guignardia bidwellii* (Ellis) V. & R.

Spray with Bordeaux mixture; first, when the buds begin to open. Spray again when the leaves are one third grown, and a third time when the vines are in full bloom. After this apply the fungicide every ten or twelve days until the first sign of ripening fruit; then discontinue all treatments. Good results will follow the use of Bordeaux mixture for the first three sprayings and ammoniacal solution of copper carbonate for the others. The course of treatment first described will cost about 2½ cents per vine; using the combined fungicide the cost will be reduced to 2 cents per vine.

two lines of discharge hose, each about twenty feet long. Fasten the pump by means of wood screws to the head of the barrel, as near the edge as possible. The suction pipe should extend to within an inch of the bottom of the barrel and should have upon its free end a coarse strainer. For filling the barrel an opening six inches long and four inches wide should be made in the head. Some means of closing the opening should be provided, but this is a matter so simple in its nature that it is hardly necessary to say anything further about it. With the attachment of a nozzle to the free end of each hose the outfit is complete. A machine made in accordance with the foregoing plan will cost from $20 to $25, and will require for orchard work a horse and two men to manipulate it. When used in the vineyard, however, or in spraying low-growing crops a horse and one man are sufficient to operate it.

As an indication of what can be done with the various machines mentioned, it may be said that in vineyard work one man with a knapsack pump can spray from four to five acres a day. With an automatic horse-power machine operated by two men, from seventeen to twenty acres a day can be sprayed. With the barrel apperatus drawn by one horse and operated by two men, ten acres may be counted a fair day's work.

Having now reviewed the various questions connected with fungicides let us turn our attention to a matter which of late has attracted more or less attention in the horticultural world, viz., the relation of spraying to the public health. We are all willing to admit, of course, that copper in any form is not a desirable food. While we are willing to admit this, some of us are not prepared to accept the published statements to the effect that it is to be classed with the virulent poisons. I may say without

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GRAPE DOWNY MILDEW, *Plasmopara viticola* (B. & C.) Berl. & De Toni.

Spray with Bordeaux mixture; first soon after the berries are formed. Make a second application of the same preparation in twelve or fifteen days, followed by others at similar intervals until the fruit begins to ripen. In regions where both black rot and downy mildew prevail the treatment for the former will hold the latter in check.

PEAR LEAF BLIGHT; CRACKING AND SPOTTING OF THE FRUIT, *Entomosporium maculatum* Lev.

In the nursery spray with Bordeaux mixture as recommended for cherry leaf blight. For combating the fungus in the orchard, where it causes the premature fall of the leaves, and the cracking and spotting of the fruit, spray first with the Bordeaux mixture about the time the flower petals fall, make a second spraying ten days, later, and follow after two weeks with a third. The cost of treating full grown standard trees as recommended will average from 10 to 14 cents per tree. Dwarf trees may be treated for about one third less.

PEAR SCAB, *Fusicladium dendriticum* (Wallr.) Fckl.

For this disease, follow the directions laid down for apple scab.

QUINCE LEAF BLIGHT AND FRUIT SPOT, *Entomosporium maculatum* Lev.

Treat the same as pear leaf blight. The cost will average about 10 cents per tree.

entering upon any lengthy discussion of the matter. that all the evidence goes to show that fruit properly sprayed with the Bordeaux mixture and other fungicides containing copper is entirely harmless. This statement, it must be borne in mind, is not based upon theoretical grounds or presumptive evidence. It is founded on carefully made chemical analyses and field experiments extending over a period of three years. Granting even that this evidence is faulty we have a much stronger refutation of the statement as to the danger of this work in the mere fact that thousands upon thousands of fruit growers the country over are spraying every year with fungicides, and as yet not a single authenticated case of poisoning from eating fruit thus treated has been brought to our attention.

In conclusion I wish to call attention once more to the importance of doing everything at the proper time and in the proper manner. Success in this as in everything else comes only after careful work and rigid attention to details. Study the subject thoroughly in the field and library, and I am sure that every moment thus expended will be amply repaid in better crops, better prices, and, what is more important, the satisfaction of knowing that you have made a good fight for what is rightfully your own and have succeeded.

ROOTS AND SOIL WATER.

BY PROF. E. S. GOFF.

[Read before the Western New York Horticultural Society.]

I have not, of course, forgotten that I am to address a horticultural society. The subject that I have chosen may, at first thought, seem a little inappropriate to an assembly of this kind, composed as it is chiefly of fruit growers and nurserymen. I simply suggest that in our work at Geneva, we are aiming not only to gather new ideas in the more superficial part of agriculture and horticulture, but we are aiming at the same time to get down to the roots of matters, and to investigate those general principles that constitute the sciences of agriculture and horticulture, and that promise the greatest good to the greatest number. There are certain subjects in which all who till the soil are alike interested. The laws that control the nutrition of our crops and the movements of soil water, the knowledge that shall teach us how to mitigate the effects of drought, and how to render available the fertility now locked up in the soil by chemical affinity; these are subjects in which the fruit grower, the nurserymen, the gardener and farmer are alike interested. I desire to call your attention to some ideas suggested by our work at Geneva, which, while they do not pretend to elucidate completely the important subjects I have just mentioned, do, nevertheless, throw some feeble rays of light in that direction.

All of our cultivated plants, whether of the orchard, the nursery, the garden or the farm, have roots. It is through the water and nourishment absorbed by these roots that our crops are enabled to develop, if at all, and it is almost exclusively through these organs that we are able to give the assistance that favors their development. Obviously, then, a knowledge of the laws that govern root growth, and the movements of that indispensable collateral to root growth, the soil water, is of the greatest importance. And yet it is surprising that this subject has been so little investigated. Thirty years ago the editor of the *Gardener's Chronicle* remarked. "If there is any one subject that most nearly concerns the practical cultivator, as well as the man of science, it is the precise nature of the action of roots; for on them more than on any other organ of a plant depends the health of crops of every kind, without one single exception. That the subject has not been more skillfully worked up is one of the curiosities of science." Since this time botanists have given considerable attention to the subject, but it is safe to say that from the cultural standpoint little has been added to our knowledge. The average cultivator seems almost unconscious that his plants have roots at all. In his treatment of them he follows not so much the dictates of judgment based upon knowledge as certain impirical rules that were observed by his fathers. That he is fairly successful in growing crops proves not that his treatment is best, but only that it is not so bad, but that his plants are able to develop in spite of his mistakes.

I do not propose to give here a lecture on the science of root growth, as developed by the researches of botanists. This you can study as well as I from our standard works on physiological botany. I shall only give the results so far as attained of certain experiments undertaken at our station, and I may add which are not yet completed.

The stems of most of our cultivated plants incline upward. The roots on the other hand, of nearly all of them at least in the soil of the station, incline horizontally. A certain part of the roots it is true, grow downward, just as certain branches above ground grow horizontally, but the great majority roots incline as just said to the horizontal. Of all the plants that I have examined, I have not found one in which the roots did not extend horizontally as far as the branches, and in very many cases, they ex- very much further. I have not followed out the roots of the more rampant growing squashes and pumpkins, of which the stems sometimes extend a distance of 50 feet or more; but in the muskmelon I have traced the roots farther than the longest stems, and in a plant of the Hubbard squash, I followed a root a distance of 10 feet, at which point it was still an eighth of an inch in diameter. It might doubtless have been traced much farther, but was accidentaly broken and the remainder could not be distinguished among many other roots. I think it is entirely safe to say, that as a rule the roots of our cultivated plants, (I do not here include trees) occupy more than is covered by the branches. As to the depth in the soil at which the roots of our crops lie, I can make the general statement, that in the plants examined at the station, the greater part lie between three and eight inches below the surface. In nearly or quite all of the plants examined a certain portion of the roots reaches the depth of two feet or more, but these deep growing roots are generally few in number, and put out very few fibres, from which it may be inferred that they perform comparatively little service in nourishing the plants to which they belong. Those plants that are natives of the tropics, and that make a very rapid growth during the summer, as corn, sorghum, tobacco, the squash and other cucurbitæ, root shallower than plants that are natives of cold climates. In these tropical plants the greater part of the roots lie from two to five inches below the surface. Among the plants that root especially deep, may be mentioned the cabbage family, parsnip and parsely.

I may add, that in general, no considerable part of the root development is found below the plow line. As a rule, the greater part of it lies just above this point, and in many instances the roots appeared spread out upon the top of the layer of soil undisturbed by the plow, as upon a table.

Just why the roots grow in this particular portion of the soil is an interesting question. We know that they have power to grow much deeper. We may assume on general principles, however, that the roots develop fastest where the conditions are most favorable for their growth, and to their ability to nourish the plant, The soil is more porous, warmer, and usually more feetile near the surface, though not more moist. If the roots were seeking only water, they could doubtless find this more abundantly deeper down at least in dry weather If, however, they are seeking warmth, oxygen and plant food, with moderate moisture, they would find these just where we find them—near the surface, and in the soil made mellow by tillage. An experiment made at the station the past season gives us one hint upon this question Two pits were dug, each three feet deep, and three feet in diameter. One of these was entirely filled with rich soil, the other was filled half full with rich soil, and finished with clay. A drain tile was then set in a vertical position in the center of each pit; this was filled with rich soil and a kernel of corn planted in each tile. In both pits, the roots grew down to the lower end of the tile, where they spread out in all directions below horizontal. They showed very little inclination to grow upward however. The plants grew remarkably well, the two bearing six merchantable ears and five nubbins, though their roots were nearly or quite a foot deeper in the soil than corn roots usually grow. In one of these pits, the one filled to the top with rich soil, there was certainly nothing to prevent the roots growing upward; and hence I infer that the temperature of the soil is not the most potent factor that ecides the location of corn roots. At least the roots of the corn crop in an adjoining field grew in a soil decidedly warmer than that in which these plants grew, while the plants were certainly not more productive.

The relation of cultivation to root growth is of great importance. In stirring the soil about our growing crops in the manner usually practiced in cultivation, we accomplish two quite different objects, viz.: We loosen the soil, breaking thereby the capillary connection between the surface and subsoil, we introduce fresh stores of oxygen into the soil, and thus promote nitrification and root growth. Thus far the effect of cultivation is unquestionably beneficial. But in addition to these good effects we lacerate the root system of the plants to a greater or less extent. Is this, in itself, beneficial or otherwise? Have the roots of our plants any rights that the cultivator is bound to respect? Heretofore the answer has generally been "No."

We have devoted consideroble time to this subject at the station, and while I cannot give a sweeping answer to the question, I will relate the results of some experiments that are at least suggestive, and will, I hope, serve to stimulate thought and investigation upon the subject. The inquiry first arose—To what extent does cultivation injure the roots of young corn plants?

On the 30th of May last the roots of several corn plants were washed out and examined. At this time the tips of the tallest leaves when raised erect were about ten inches from the ground; but even at this early stage of growth it appeared, on laying bare the roots, that the aggregate length of the main roots and fibres belonging to a single corn plant, but eighteen days from planting, amounted to nearly or quite one hundred feet. In order to study the effect of ordinary cultivation upon the roots, a spade was inserted to the depth of three inches on four sides of a hill of corn, keeping it about the same distance from the stems, after which the roots were laid bare for examination. It appeared that twelve of the main roots of this hill had been severed, which was quite one half of the entire number. It would hardly seem that plants so young could endure such a vigorous root pruning without suffering a serious check. In a hill examined a week after a root pruning, like that just described, the root growth, as compared to that of a hill not root pruned, was found to have made comparatively little development The fibres on the nodal roots had increased in length and number, but the growth of the larger roots was much restricted. The foliage, however, did not show the effect of the root pruning as plainly as did the roots.

In order to try the effect of such root interference upon the crop, as independent of the collateral effects of stirring the soil, a plat containing one twentieth of an acre, planted with corn, was left entirely uncultivated, so far as stirring the soil was concerned, the weeds being pulled by hand as they became large enough to require it.

When the young plants had attained the height of three to six inches, a lawn edger was carefully inserted to the depth of three inches, on four sides of every hill in each alternate row, leaving the other rows undisturbed. The lawn edger was kept at a distance of three to four inches from the plants, and was withdrawn carefully so as to dirturb the soil as little as possible; the aim being to cut the roots to about the same extent as is accomplished by ordinary cultivation and to do nothing else. The soil was not dry at this time, as nearly an inch of rain had fallen during the previous week.

On June 24th, when the plants had attained about the height when they are usually cultivated the second time, a second treatment was given, on the same rows and in the same manner as the first. The time was intentionally chosen immediately after a rainy period, in order that a parched surface soil might not aggravate the influence of the root pruning. The plat was not again disturbed, except to pull such weeds as appeared, until all growth in the corn had ceased, when the crop was harvested. Counting eighty pounds of the freshly husked corn as a shelled bushel, the root pruned portion yielded at the rate of thirty-two bushels and twenty-three pounds of merchantable corn per acre, and the portion not root pruned at the rate of fifty-two bushels and seventy pounds, or an excess over the root pruned part of twenty bushels and forty-seven pounds per acre. In other words, in this experiment the root pruning, as performed, made the difference between a poor and a good crop. I certainly do not propose to argue from these results that cultivation is injurious to corn. What the experiment does teach, is this: Cutting the roots of young corn plants in a season like the past, and on soil like the plat upon which the experiment was made, is, by itself, that is, independent of the other effects of cultivation, injurious. With us the season until midsummer was exceptionally dry, but the drought did not prevent a good crop of corn where the roots were not disturbed.

It is hardly fair to raise a question without at least suggesting an answer to it. You are ready to ask, "How would you cultivate corn?" It is too early yet to lay down rules. I simply suggest that as we do not know in advance whether a season is to be wet or dry, it would be wisest to practice that kind of cultivation which stirs the soil most thoroughly with the least damage to the roots. In a word, this means to cultivate deeply in the center of the spaces between the rows while the plants are young, but very shallow near the plants; and the space that may be cultivated deeply will be narrower at the second cultivation that at the first. In washing out the roots of corn plants, it was observed that at the time the tallest leaf raised erect reached the height of ten inches, the longest roots had grown horizontally a distance of about nine inches; in other words, in rows three and a half feet apart a space about two feet wide at the center was still free from roots. One week later the horizontal roots had grown to the distance of eighteen inches, which left but about six inches of space free from roots, and by the end of another week the roots of plants in adjoining rows had commenced to intermingle.

In our experiments the next season it is proposod to carry out this ideal method of cultivation, comparing results with rows cultivated in the ordinary manner.

The theory has been advanced that root pruning at certain specified times promotes productiveness. It need hardly be said that the experiment just detailed was not made with reference to this theory. It was only intended to give a hint as to whether the cutting of the roots during ordinary cultivation is to be encouraged or otherwise.

Passing to the second part of my subject, I add that a knowledge of the movements of soil water is quite as essential to the tiller of the soil as a knowledge of the laws that govern root growth. I may also say that this subject has not received the attention that its importance deserves; and while to the casual observer there may seem to be little in it to investigate, as a matter of fact the subject is far from being well understood. There are good reasons for believing that the evaporation from the surface soil during summer in western New York is considerably greater than the rainfall of that period. An experiment made the past year at the station strikingly illustrates the truth of this statement, though other evidence may be cited in proof of it. A series of measurements has been made during the past year of the height of the water in an abandoned well near the station buildings. This well, which is forty feet in depth, is situated near the top of a ridge of such a height that in three directions it is necessary to go but a few hundred feet before reaching land that lies lower than the bottom of the well, while in the other direction is a cut made for a railroad, the bottom of which is but slightly above that of the well.

It would appear, therefore, that the water in this well must be sustained almost entirely by capillary attraction. The measurements commenced December 3, 1886. The water in the well rose rapidly during December and continued to rise, more or less, until May 3, at which time it was nine feet and one inch higher than on December 3, having risen on the average about three-fourths of an inch per day, with a rainfall of about 1.6 inches per month. From this time it commenced to fall and continued to recede almost without intermission until December 21, 1887, at which time it was 18 feet 1½ inches lower than on May 3. In other words, from December to May, with a rainfall of 1.6 inches per month, the water in the well rose three-fourths of an inch per day, while from May to December, with a rainfall of more than 3 inches—almost double—per month, the soil water was so much depleted by evaporation that the water in the well, instead of rising as fast as during the winter, actually lowered three-fourths of an inch per day. The indications from this are that the soil becomes stocked, so to speak, with water during the colder part of the year, and that it pays out during the summer and autumn at a far more rapid rate than it is replenished by the rains of those seasons.

This being the case, it is evident that much of the vast stores of water removed from the soil by our crops does not fall during the rains of summer, but was deposited months before, in the preceeding winter, and is lifted from the lower depths of the soil by capillary attraction. Indeed. much of the rainfall of summer does not reach the roots of our crops at all, but is absorbed by the parched surface soil, to be quickly evaporated again after the clouds are cleared away. It follows, therefore, that the current of soil water through the soil during summer is mostly upward instead of downward, as we have been accustomed to think of it. The fact that nearly all soils are richer in soluble matter near the surface is in itself almost a proof of this statement. Surely if the average soil currents were downward our land, or at least uncultivated lands, would not be richest at the surface. It looks as if nature were less prodigal of her fertility than some have considered her, and that our plant food does not flow out through our drains and streams to any great extent, so long as we entrust it to the guardianship of the soil. As I have said, however, these subjects are not so well understood that we can safely dogmatize much about them yet.

Certain it is that they are of very great importance to agriculture and horticulture. How can we treat the soil so as to increase its power for pumping up water from the lower depths? Can this be accomplished by the application of special materials to the soil? Can this be done through special kinds of culture? It is the legitimate work of our experiment stations to investigate such questions as this, and their efforts can hardly fail to make most valuable contributions to our knowledge.

NOTES ON TREES AND SHRUBS AT UNIVERSITY STATION, MADISON, WIS.

The past winter has furnished opportunity to form an opinion as to the adaptability of certain trees and shrubs recently planted on our grounds to the climate of Madison. I am aware that most of the plants that I shall mention have already been tested at other places in our state. But as inquiries are frequently made as to trees and shrubs suitable for ornamental planting in our state, I have assumed that these notes may have value to some of our members.

The purple-leaf plum, *Prunus pissardii*, succumbed to the winter as I had feared that it would. For two seasons after planting the tree grew finely, but the past winter was evidently too severe for it, and its buds failed to open the past spring.

Of two specimens of the English field maple, *Acer campestris*, one failed entirely, and the other has made a feeble start. Both were planted in the spring of 1892, and had not fully recovered from transplanting.

Two specimens of the Ginkko or Maiden-hair tree, *Salisburia adiantifolia*, survived the winter with little harm, though both were planted the spring previous. Teas' weeping mulberry was alive to the terminal, and promises to form a most interesting weeping tree. The *Tamarix amurensis* obtained from Prof. Budd killed back slightly the past winter. but is still a beatiful shrub. It is in bloom during a considerable part of the summer, and while its flowers ars not conspicuous, in combination with its light airy foliage it is an interesting addition to the lawn.

Abies' concolor, transplanted in the spring of 1892, killed to the snow line. The Austrian pine, *Pinus austriaca*, had its leaves destroyed on the northwest side, but the terminal buds were uninjured. Englemann's spruce, *Abies engelmanni.* is thus far the most attractive evergreen on our lawn. It was not in the least injured by the winter. Its compact habit, with the delicate bluish tint of its young shoots render it a most beautiful tree at this season. How far its youthful beauty will be retained I cannot say, but it certainly is most desirable as a young tree. In its peculiar glaucus, it closely resembles the Colorado blue spruce, but the greater compactness of its branches renders it decidedly more attractive than this species.

The European strawberry tree, *Enouymus europæus.* was considerably injured by the winter, while our native species was uninjured. The golden elder, *Sambucus aurae*, was killed to the snow line, but has started up with much vigor, and is now almost as beatiful as ever. The golden leaved syringa, *Philadelphus folia aurea*, was scarcely injured by the winter, and with its bright yellow foliage forms on attractive shrub *Deutzia crenata* was killed to the ground, while *Deutzia gracilis* was comparatively little injured. The latter is a desirable shrub for the lawn, but would doubtless do better with than without winter protection. *Viburnum plicatum* was considerably frozen back, and the purple leaf spiraea, *Spiraea japonica*, was killed to the snow line. though it has made a vigorous start. Two loniceras received from Prof. Budd, viz: *Spiraea elegans* and *gracilis* seem entirely hardy, and are desirable. *Eleagnus longipes* was killed to the snow line, but has started well and bloomed freely. A variety of *Rosa rugosa* received from Prof. Budd was not in the least injured by the winter, though without other protection than the snow, and is now in bloom. Its large single blossoms of clear rose color are quite attractive.

Perhaps the finest flowering shrub on our grounds is the Van Houten's spiraea, *Spiraea Van Houteii.* It seems entirely hardy; and its profusions of snow white blossoms in early June make its branches appear like literal wreaths of snow

The yellow wood, *Cladrastis tinctoria*, is growing in a sheltered location on our grounds, and in its place seems entirely hardy. It forms a beautiful small sized tree of the locust family, but without the objectionable features of the common locust. Its racecemes of purple flowers are decidedly attractive.

THE DISTRIBUTION OF TREES IN WISCONSIN.

L. S. CHENEY, Madison, Wis.

When Dame Nature distributed her forests, she gave to Wisconsin a goodly portion. Something she gave to every part, while upon the state as a whole she bestowed a variety of wealth and beauty unsurpassed anywhere. If we consider small woody vines and running plants, no less than two hundred kinds of trees and shrubs are found within our borders. These include the little creeping snowberry that nestles about old moss-covered logs lying in the swamps of the north, the fragrant arbutus, clothing the sandy barren with a mantle of green whose border is fringed with delicate tints of white and pink. The rose, the acknowledged queen of the wild flowers, the hawthorne which brings to us in early spring its burden of fragrance and snowy blossoms, the maple with its thick canopy of emerald, inviting us to a cool and shady retreat beneath its ample crown, the elm with its feathery stem and gracefully swaying festoons of verdure, the oak with its gnarled and knotted branches, the symbol of rugged strength, and, as a fitting climax, the graceful, regal pine, the monarch of our forests.

Not all of our forest trees and shrubs are equally distributed throughout all portions of the state, nor do our present forest areas correspond to those found in the same territory three quarters of a century ago. Let us go back to the time when the red man held undisputed sway from Lake Michigan to the great "Father of Waters." If we journey from the point on the former where Racine is now situated northwest to the present location of Juneau, thence northward to where the Fox river falls into Lake Winnebago, and from there to the St. Croix falls, we shall have to the west and south of our line of travel a prairie region, broken by the heavily timbered areas of the Chippewa, Black and Wisconsin rivers, by that occupying what is now Richland and adjoining counties, and smaller areas of stunted timber growth throughout the region. North and east of this line the country is well wooded. Over all that portion lying between the Fox river valley and Lake Michigan, and a strip about fifteen miles in width, skirting Green Bay on the west, deciduous hardwood trees predominate, while the cone bearing sorts are the most numerous to the north and west.

Let us now go on a tour of inspection of Wisconsin timberlands as they are at present. Our attention is attracted at the outset to the fact that there are no longer any extensive-tracts of prairie in the state. What has become of one-third of our territory that was once an almost treeless expanse? When the region became settled and the ravages of annual prairie fires were stopped, the natural seeding from the few trees present, and the fertility of the soil sufficed to produce, in a very short time, the woodlands as we find them now. How has it fared, in these years, with the pines? Not so well. The coming of the white man was not, to them an earnest of good. Before his ax they have receded from the shore of Lake Michigan and the banks of all the larger streams, until, from one-half the land once clothed in perenial green, they have completely disappeared.

It would be interesting and instructive to examine closely the habits and peculiarities of each of our trees and shrubs—they have characteristics just as boys and girls have, which mark unmistakably their personality—but we must content ourselves for the present, with a little about a few of those with which we are most concerned. First in importance, to Wisconsin, is the white pine. This is our noblest tree. When growing in the forest it frequently reaches two hundred feet in height. It has a single shaft, straight as an arrow, tapering gently, from the ground up. From sixty to one hundred feet of the trunk is entirely free from branches; above they appear in whorls growing out at right angles to the stem. When growing in open places the early branches do not die and fall away.

The trunk not infrequently divides into two or three main ascending stems, each giving off branches, as in the case of the single stem. Under such conditions, the tree has a thicker, rounder top, and does not attain the height which it reaches in the forest. The bark of the branches and the upper part of the trunk is smooth and soft, often having a polished surface. With age the bark becomes fissured; but between the fissures the surface remains smooth. This tree may always be recognized by the number of leaves in each of its clusters. There are five. In related species there are but two or three. The cones are long, slender and smooth.

When our state was settled, there was merchantable pine on fully two-thirds of its area. A line drawn from Milwaukee northwest to Grand Rapids thence south to Mauston, and from there to Hudson, would mark the southern limit of this area. South of this line there were many small tracts which furnished pine lumber, and over a large portion of it there were scattering trees too small for anything but ornament. At the present time the territory bearing pine good for commercial purposes is perhaps less than half the original area. From the southern limit of this area, from the shore of Lake Michigan, and from all the large streams the pine has retreated before the attacks of the lumbermen.

The red, or so-called Norway pine, is found on the more rocky or sandy portions of the pine region, having about the same general limits as the white pine. The characteristics of this tree are its tall trunk, usually very straight, small top, reddish, flaky bark, short, rough cones, and very long leaves, two in a cluster. Generally speaking, this is a less desirable tree than the former. Of the hemlock it can only be said here that it is quite generally distributed throughout the pine region and is coming into use as a substitute for pine for many purposes.

The oaks are fairly well distributed over the southern three-fourths of the state. If a line be drawn from Shawano to the southeast corner of Sawyer county, and from there directly west to the boundary of the state, the oak tract will lie to the south. North of this the country is almost without a representative from this group. The oaks may be readily distinguished from other trees by their fruit, the acorn. There is, on the contrary, no very easy way of distinguishing one species from another. The white oaks, as a group, may be known from the black oaks by the leaves, the former having rounded lobes, and those of the latter having pointed ones. Our most valuable species are the white, the red, the swamp white, the black and the bur oak. Of these, the first two are found in all the rich woodlands of the oak area. They are perhaps best developed in the central portion of the state. The swamp white oak takes the place of the ordinary white oak in low, wet woods. The black oak is the prevailing oak over the original prairie regions of the state, and is rarely found elsewhere except on small areas of barrens. The bur oak, with us, is not usually a large tree, and does not do well except within very narrow limits. In three or four counties in the southeastern part of the state there are fine groves of this majestic tree.

The elm is found in all parts of the state, but it is confined almost entirely to the low lands, especially those bordering lakes or streams, where it constitutes a considerable portion of the forests. Commercially this tree is of comparatively little value in Wisconsin, although it is used elsewhere extensively in the manufacture of furniture and for making packing barrels. As an ornamental tree, however, the elm is one of our best. In full foliage it is, without doubt, the most beautiful of our trees. It varies considerably in style of growth. We see it now with its trunk soon dividing into several principal ascending branches, these dividing again and spreading, until the whole assumes the form of the tall Etruscan vase. Again, we meet one having a single shaft, bearing at the top a few large, horizontally spreading branches, usually terminated by smaller, pendent ones. Where the tree has been allowed to grow in an open place it often takes the form of the round-topped oak.

Our trimmest, most symmetrical tree is the hard or sugar maple. Spreading somewhat generally it is found in all the rich hardwood forests of Wisconsin. Within the forests themselves it is inclined to be local in its distribution. The typical maple has a short trunk surmounted by a broadly oval or spherical crown. When growing in the forest it may become less symmetrical, with a top less dense. It may be of interest to say that the Norway maple is being successfully grown in a few places in southern Wisconsin. This tree has the habit and foliage of the sugar maple, but retains its leaves longer in the autumn and is a hardier tree. We have many other trees that are worthy of attention. The ash, the birch, the walnut, the hickory, the linden, or basswood, the beech, the spruce, the larch, the cottonwood, the willows, and a score of others, all play an important part in our welfare. In short, every tree or shrub about us has something to do with our happiness.

THE AMERICAN WHITE ELM.

W. D. BOYNTON, Shiocton, Wis.

Our favorite trees are something like our human friends; they draw our admiration and love; our hearts gȯ out to them intuitively. We know that we like them, and yet we cannot easily give the reason therefor. Yet it is possible to some extent to analyze these thoughts and feelings—to catalogue the good qualities of a friend, or to state why we are fond of a particular tree. Do we not sometimes in our thoughts clothe trees with human attributes? Do we not find all types among them? Do we not find the forward and ambitious; the stately and awe inspiring; the brave and sturdy; the beautiful and graceful; the modest and lowly?

Our great men possess all the nobler human attributes in a large degree, and it is this which enables them to meet all human exigencies successfully; so, too, I should say that our greatest trees should possess many, if not all, of the qualities above enumerated. On this ground I raise the banner of the elm.

Alphonso Wood, the famous American botanist, says of this great American tree: "A majestic tree, usually distinguished by its long pendulous branches. The trunk attains a diameter of from three to five feet, losing itself at the top in two or more primary branches. These ascend, gradually spreading, and repeatedly dividing in broad graceful curves, and affording a good example of the solvent axis. It is a great favorite as a shade tree, and is frequently seen rearing its stately form and casting its deep shade over the 'sweet homes' of New England."

And not only is it a great favorite in New England, but also in almost every corner of our broad country. Few trees have so wide a habitat, and thrive under such varied conditions as the elm. It exists naturally at least three hundred miles farther north than the oak.

It is very hardy and of rapid growth. It thrives alike on high, well drained lands, and on low undrained lands.

The root formation is such that it can be readily and safely removed from its natural position in the forest to any desired location. Unlike the oak and hickory, it has not so called spur root, running straight down into the subsoil, which always renders the work of removal difficult and usually unseccessful.

In growing, the elm has a happy faculty of adjusting itself to the room or space available. It will stand a little crowding, and, if trained to that end, will take on a close, compact head in its limited space. When given plenty of room and its own free way, it makes a most magnificent growth with its long, sweeping, pendulous branches. Then indeed it is sturdy, stately, beautiful and graceful.

It has a beautiful way of reaching its great arms down over us, as though it would be with us, rather than of trying to rear its head away up into the clouds above us. It seems to dislike to get away from old Mother Earth and its human friends.

Finally, is there another tree that figures so prominently and continuously in the history of our country, and in the verse and lines of our great poets and authors? Whittier, Lowell, Bryant, Longfellow, and Thoreau all sound the praises of the noble elm which sheltered them in childhood, and under whose arms they now sleep the last, long sleep.

The foliage of other trees may take on more vivid autumnal hues, but what can be more beautiful among all these bright colors than the delicate soft yellow of the elm, which is so well portrayed by Thoreau:

"I see the emerald woods prepare
   To shed their vestiture once more,
And distant elm trees spot the air
   With yellow pictures softly o'er."

THE WORTH OF WISCONSIN FORESTS.

B. S. Hoxie, Evansville, Wis.

Forty years ago Wisconsin possessed the most valuable pine forests of any state in the union. These forests are being rapidly cut off and the timber removed to supply the demands of commerce. This has brought millions of dollars to the lumbermen and given employment to thousands of men annually. But this will not always continue, for it is estimated that in less than fifteen years these forests of pine will be entirely gone over and our material wealth in this direction counted as passed. Already some of our lumbering town and cities feel the depressing effects of the loss of business, as lumbering operations are now confined to the more extreme northern counties.

Besides the loss of our pine forests and their products our best varieties of hardwood are getting more scarce every year. So much is this true that we have no longer any practical amount of standing black walnut left fit for commercial purposes, for the manufacture of furniture, and the supply of white wood or poplar is confined to limited areas. The oaks are the most numerous of our state trees and in all respects perhaps the most valuable for fuel, railroad ties, wagon work, furniture, car bulding, and house finishing lumber.

DESTRUCTION BY FIRE.

This rapid narrowing of our timber area, the source of wealth, the accumulation of ages, would not of itself be alarming, if it were the only loss. The refuse of tree tops, dry leaves and underbrush invite the ravages of periodical fires, which burn all young growth, and in many instances the forest floor itself, licking up, as it were, all humus and vegetable mold, which should afford the soil for future tree growth or annual crops of grass or grain.

Besides the considerations mentioned as to the value of our forests, they are the home of our wild game and fur bearing animals, which are no small source of profit and recreation to the hunter and pleasure seeker.

We till the land for the money value there is in the annual crops produced. I could show that there is a money making value in the forest crop, and the annual increase may be represented as money at compound interest. A small tree, one or two years old, is only fit for a walking stick, but the layer on layer of wood every year for fifteen or twenty years, increases the bulk of timber in compound converse proportion.

We should then protect our forests, and by all available means promote the growth of the different varieties of useful trees for home use, and for commercial purposes. You and I may not live long enough to see the value of commercial forest planted by our own hands on now sterile lands, but future generations will bless us for planting them. Who shall estimate the value to the home and the landscape by reason of beautiful trees?

FAVORITE WISCONSIN TREES—THE OAK.

President ALBERT SALISBURY.

Doubtless, no tree is so widely distributed throughout Wisconsin as the oak. In scarcely any part of the state, where there are any trees at all, can one walk a mile without coming upon at least one species of oak. It is well known to every farmer, to every woodsman, and to every other person who knows one tree from another. And with those who are most shamefully ignorant of trees, the oak is the one tree which they are safely able to identify. This general familiarity with the oak is due not alone to its wide distribution, but also to its well marked characteristics. It grows to a good size; thrives, in some of its species, on almost every soil; and seldom succumbs to any sort of enemy or abuse. The oak is no stranger, no coy exotic, no dainty dandy of a tree; but an honest, sturdy tiller of the ground, drawing its food from the depths of the earth and returning abundant products for the enrichment of the upper soil. Few trees, if any, have wider utilities than the oak. More than half the firesides in Wisconsin brighten with the glow of its coals. The wagon-maker, the cooper, the ship builder, find their fortunes in the oak; and what beauty the cabinet-maker is now tardily revealing in the red oak, the least aristocratic, while yet alive, of the oak sisterhood!

The oak has not only strength but beauty, the beauty of color. What can be more lovely than the downy pink of the opening oak-buds and tiny leaves in spring. There are no words to fitly express the delicate harmonies of the oak woods at this stage. Later, comes the rich glossy green of midsummer; and, again, the glow of autumn, the rich crimson bronzes of the black oaks and the glowing purple of the white oaks. The maples are more brilliant; but the richness and depth of the autumn woods are mainly due to the oaks.

The distinguishing features of the oak are not found in the form of its leaves, as many suppose. Although the leaves of our northern species are all large and deeply lobed those of the southern states present widely different forms. Some are evergreens, as the famous live oak; some have small narrow leaves with entire margins, as the willow oak; some have leaves with wavy outlines, as the beautiful chestnut oak; while one species, the laurel oak, has leaves resembling those of our wild cherry tree.

The sure and easily recognized sign of the oak is its fruit, a smooth nut, set in a scaly cupule. There is no mistaking an acorn, or oak-corn. Some species of these are edible, as that of the chinkapin oak; and nearly all are food for the lower animals.

But the character of the oak is best shown in the manner of its growth, its broad angles and rugged, massive strength.

Says the "Autocrat of the Breakfast Table,"—"There is a mother-idea in each particular kind of tree, which, if well marked, is probably embodied in the poetry of every language. Take the oak for instance, and we find it always standing as a type of strength and endurance. I wonder if you ever thought of the single mark of supremacy which distinguishes this tree from those around it? The others shirk the work of resisting gravity; the oak defies it. It chooses the horizontal direction for its limbs so that their whole weight may tell and then stretches them out fifty or sixty feet, so that the strain may be mighty enough to be worth resisting. You will find, that in passing from the extreme downward of the branches of the weeping-willow in the extremo upward inclination of the poplar, they sweep nearly half a circle. At 90° the oak stops short; to slant upward another degree would mark infirmity of purpose; to bend downward, weakness of organization.

This characteristic is even better shown in winter than when the trees are in full leaf. What lovers of trees has not lingered an a pleasant winter's day, or evening, to study and admire the the outlines. traced against the sky, of a group of venerable bur oaks. Their summer aspect, too, is strong and dignified; and on a summer night,

> "Those green-robed senators of mighty woods,
> Tall oaks, branch charmed by the earnest stars,
> Dream, aud so dream all night without a stir."

No tree holds a higher place in literature. Poets no less than prosey practical men, love the oak. The cedar, the palm, and the pine are the only rivals in their affections. And this is not alone for its utility and beauty, but for its symbolic character. "Hearts of oak" is an epithet that needs no interpreting. The Romans gave a crown of oak leaves to him who had saved the life of a citizen.

What better choice then, than to make the oak the state tree of this vigorous yound commonwealth and sing with Chorley,—

> "A song to the oak, the brave old oak.
> Who hath ruled in the greenwod long;
> Here's health and renown to his broad green crown,
> And his fifty arms so strong."

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